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## WATERBURY STREET AND SEWER BUREAU

New System of Cost Keeping Explained—Method of Building Penetration Macadam—Sprinkling, Oiling and Sweeping Streets—Sidewalk Maintenance—Catch Basin Cleaning—  
Repair Shops and City Yard.

By W. E. KENNEDY AND C. F. HARTER.\*

The Bureau of Streets and Sewers of the City of Waterbury, Conn., has a wide variety of duties, among which are the care and maintenance of streets, street cleaning, oiling and sprinkling, sidewalk construction and maintenance, catch basin cleaning and complete charge of the sewers. In street construction, the bureau is required to bid for the work against outside contractors, but in case the contractors are awarded the work, the city engineer is in charge of the construction. Owing to the fact that the department is economically and efficiently managed, paving prices have been rather low in the city.

Last fall, after a long study of the needs of the department, a new cost keeping system was installed, the use of which permits the determination of the exact cost of construction, including the items in labor and materials, and also permits the proper charges to be made against each division of the department. This is important since a specific appropriation is made for each item such as tools, coal, oil, sidewalk expenses, street cleaning, even down to the wages for each permanent employe and a lump sum for day labor. The total appropriation for 1914 was \$245,399.46. In the work done by day's labor, each foreman keeps an accurate account of the material used on a card provided for that purpose and must also charge the time and material against the proper heads.

These cards are turned in at the office every morning. The labor costs are figured and, in addition to being charged to the various jobs, are also charged under the five general heads of "pavement cleaning," "sprinkling and oiling," "care and maintenance of highways and bridges," "inspection of the same" and "care and maintenance of sewers." Time, material and labor costs are thus figured directly on each sheet and posted to the cost ledger (see following page for sample of cards).

Monthly statements are rendered to the controller, showing unexpended balances in each item of the appropriation, with the incumbrances or advance orders charged against each. An inventory and report of stores

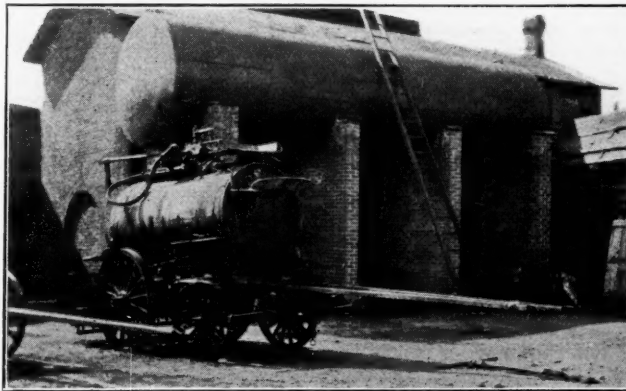
\*Superintendent and chief clerk, respectively, of the Bureau of Streets and Sewers.

on hand is made to the controller every month, and a complete inventory every three months. All orders for supplies, equipment, etc., are made through the controller.

The system has not been in operation long enough as yet to give very complete costs, but the report for the first six months of 1914 contains some interesting data on costs of road and street construction, street cleaning, sidewalk repairing and sewer and catch basin cleaning.

Waterbury has a total of 191 miles of streets, but only slightly over 5 per cent of these are paved. The mileage of the various kinds of pavement are:

	Miles.
Brick .....	3.82
Belgian block .....	2.46
Bitulithic .....	1.85
Topeka .....	.94
Granite block .....	.84
Sheet asphalt .....	.50
Wood block .....	.20
Asphalt block .....	.03
Total .....	10.64

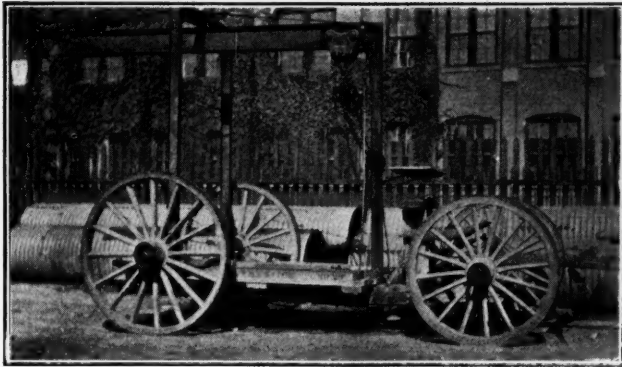


TANKS FOR ROAD OIL AND DISTRIBUTING WAGON.

There are two reasons for this small mileage; the first is a lack of money available for street paving; the other may be found in the rapid growth of the city, it having increased over 60 per cent in each of the last four decades. In 1890 the city had only 28,000 inhabitants against a present population of about 85,000. The bureau has, however, kept all the streets in good repair and has laid some pavement and several miles of macadam annually.

The method employed in building penetration macadam gives excellent results. The street is excavated to a depth of six inches and enough two-inch stone applied to compact into a layer four inches thick. Sand is then spread over the stone and broomed into the voids. One half gallon of Tarvia B to the square yard is next applied and over this is spread a one-inch layer of  $\frac{3}{4}$ -inch stone. Then comes another coat of Tarvia, at the rate of  $\frac{3}{8}$  gallon per yard and over this is thrown a thin coat of hot  $\frac{1}{2}$ -inch stone. The road is then thrown open to traffic for a few months, after which it is again flushed with Tarvia. The cost of laying about 2,100 yards of this macadam on State street was:





WAGON FOR CARRYING AND LAYING CROSSWALKS.

Pavement.	Yards.	Cost.	Cost per yd.
Belgian block .....	408.5	\$339.38	\$ .830
Brick .....	225.0	428.38	1.904
Asphalt .....	2125.0	902.09	.424

Abutting property owners are assessed for sprinkling and oiling according to their street frontage. The assessment last year was \$0.033 per foot or \$3.30 for a hundred foot front. Where possible the sprinkling is done from trolley cars, the charge for which is \$75 per week. Up to July 1st, the trolley sprinklers had used 5,540,505 gallons of water. The horse carts sprinkled the streets with 3,782,555 gallons of water, but the cost of this is not available. On the dirt roads of the city, the bureau spread 67,823.5 gallons of Texas oil and 12,600 gallons of Ugite.

There were also 2,122 yards of cobble gutters laid at a cost of \$988.03.

The bureau has complete charge of the sidewalks, both construction and maintenance. When new sidewalks are constructed the cost is divided equally between the abutting property owners and the city, but after the walks are built, the city maintains them. Tar and pitch walks are predominant. During the first six months of the year no new walks were constructed but 20,085 yards of old walks were repaired at a cost of 18 cents per yard.

All the work of street sweeping is done by hand, but most of the streets are flushed daily. A force of 39 uniformed men clean the paved streets, and a "flying squad" of 10 men attend to the unpaved streets within the city. There are 13 men in the "outside" gang which repair, clean and care for the numerous roads that enter the city.

Each man has a certain district to clean and is responsible for that section. The sweepings are deposited in cans located at designated places and are collected by wagons sent out for the purpose. To facilitate loading, each wagon is equipped with a hand-operated winch and derrick. The sweepings are dumped on lands outside the city.

Up to July 1st, 228,790.4 square yards of pavements were cleaned and 4,123 cubic yards of sweeping were collected at a cost of \$3.14 per cubic yard. The items of cost were:

Labor .....	\$11,080.99
City teams .....	1,706.34
Hired teams .....	44.12
New equipment .....	135.01
<b>Total .....</b>	<b>\$12,966.46</b>

The cost of cleaning cross walks and unpaved streets was \$3,408.89 for the same time.

A separate gang of men under a sewer foreman cleans the catch basins. During the six months mentioned, 394 catch basins were cleaned at a total cost of \$611 or \$1.55 each. Twenty-three sewers were cleaned, 167.5 cubic yards of material being removed at a cost of \$453.78 or \$2.71 per cubic yard.

In the city yard are carpenter, blacksmith and painting shops and an asphalt mixing plant; oil tanks with a storage capacity of nearly 20,000 gallons, a stone crusher and much other equipment. At present there are stored in the yard 48,000 granite blocks which were removed and replaced with other pavement, and were refaced at a cost of \$18 per thousand and will be used again shortly.

## NORFOLK STREET CLEANING DEPARTMENT

### Machine and Hand Sweeping and Collection and Disposal of Refuse.—Amount of Each Class of Work Done, and Unit Costs.

By WILLIAM R. RUSSELL, Superintendent of Street Cleaning.

In the city of Norfolk, Virginia, there are 172 miles of streets, of which 70.4 are paved. The different classes of paving and the extent of each are as follows:

	Miles.
Asphalt .....	29.8
Granite block .....	19.0
Bitulithic .....	10.5
Wood block .....	3.2
Belgian block .....	3.0
Asphalt block .....	1.9
Brick .....	1.5
Bituminous macadam .....	1.5

To obtain satisfactory results in the operation of the Street Cleaning Department is rendered more difficult from the fact that the city is very flat, and the average height above sea level is only about seven feet.

The city does its own street cleaning and employs in this work about 150 men. The total amount of machine sweeping done each week is 86¾ miles, and the amount of hand sweeping per week is 176¼ miles.

*Machine Sweeping.*—This work is done by gangs, each composed of four broom hands and one man with a hoe to scrape mud from gutters, also one sprinkler, one sweeping machine, and three carts to collect and haul sweepings to the dump. There are four gangs, containing a total of 37 men, 28 horses, 4 sprinklers, 4 sweeping machines and 11 carts.

One day and one night gang for the four old wards of the city each consists of four broom hands, one hoe hand, three carts with drivers and horses, one double horse sweeper and driver, one double horse sprinkler and driver, and one foreman.

The work performed and the cost of same is as follows:

District.	Miles.	Sq. yds.	Cost.	Cost per mile.	Cost per 1000 sq. yds.
Four old Wards*..	13	207,637	\$61.02	\$4.69	\$38 3/16
Atlantic City†.....	4½	82,658	14.62	6.49	.18¼
Berkley Ward‡.....	8½	152,532	38.40	4.52	.25

\*Swept daily. †Swept six days a week. ‡This cost includes all handling and putting sweepings on dump.

These costs include those for labor, equipment, feed, horse-shoeing and wear and tear of harness.

In explanation of the disparity in the costs shown in the foregoing statement, it should be stated that the four old wards of the city cover practically the entire business section; Atlantic City ward is a residential section, while Berkley ward (formerly the old town of Berkley, annexed to the city several years ago) is partly residential and partly business.

*Asphalt Sweeping.*—This work is done with hand brooms, the number of times per day sweeping is done depending very largely upon the amount of traffic; in some portions of the city the streets are swept as often as five times a day. Each asphalt sweeper is given a certain yardage to clean, the area being governed by the amount of travel on the streets composing his division. The old section of the city (the four old wards) has ten



divisions. Where a division has Belgian block paving the sweeper is required to keep the gutters clean.

On nine asphalt routes four carts take up the sweepings as rapidly as the dirt is piled and carry them to the dump. This method is found to give better results than having push carts with bags attached to same, as it allows the the man on the route to devote his entire time to sweeping, thus covering more yardage, and there are no unsightly and ill-smelling bags lying on the street waiting to be emptied. The average collection of sweepings (night and day gangs) is two tons per mile, or one ton to each 7,691 square yards of area swept. The carts used to haul this material are wooden dump carts, carrying one and one-half cubic yards each; the average weight of the load is 2,515 pounds, and the carts average four loads each per day. The cost of loading and hauling the sweepings is 92 cents per unit (cart-load of 2,515 lbs.) The average weight of empty cart is 1,135 pounds. The annexed statement shows the amount of asphalt sweeping done and the cost of same.

**SWEEPING DONE, BY ROUTES, AND COST OF SAME.  
ASPHALT SWEEPING (BY HAND).  
PAVEMENTS SWEEPED DAILY.**

Route.	Miles.	Sq. yds.	Cost.	Cost per Mile.	Cost per 1,000 yds.*
No. 1, 2 men...	2 1-10	27,250	\$7.02	\$3.34	13c.†
No. 2, 2 men...	6-10	13,172 2-9	4.41 1-3	7.35 1-2	31c.
No. 3, 4 men...	1 1-8	20,755 5-9	9.13	8.11 1-2	45c.
No. 4, 1 man...	8-10	16,566	4.96 1-2	6.20 1-2	30c.
No. 5, 2 men...	1	21,600	4.41 1-3	4.41 1-3	21 1-2c.
No. 6, 1 man...	7-8	13,422 2-9	2.35 5-6	2.69 1-2	18c.
No. 7, 1 man...	1	16,172 1-3	2.35 5-6	2.35 5-6	13 4-5c.
No. 8, 1 man...	1 1-16	13,444 4-9	2.35 5-6	2.22	18c.
No. 9, 2 men...	1 5-8	26,066 2-3	4.41 1-3	2.71 1-2	12c.‡
No. 10, 1 man...	7-8	16,822 2-9	2.35 5-6	2.69 1-2	14c.
Brambleton, 10 men	6 8-10	122,900	27.64	4.06 1-2	20c.§
At. City Ward:					
No. 1, 1 man...	2 1-2	40,462	5.76 3-4	2.30 7-10	14 1-5c.
No. 2, 1 man...	3 1-8	63,266 2-3	5.76 3-4	1.84 3-5	18 1-5c.
No. 3, 1 man...	2 1-2	44,246 2-3	5.76 3-4	2.30 7-10	13c.
PAVEMENTS SWEEPED THREE TIMES A WEEK.					
At. City Ward:					
No. 4, 4 men...	5 1-8	100,801	10.83 1-2	2.11 2-5	10 7-10c.
No. 5, 4 men...	2 9-10	44,828 8-9	10.83 1-2	3.13 1-10	20 1-5c.
No. 6, 4 men...	5	93,650	10.83 1-2	2.16 3-5	11 3-5c.
Lambert's Pt., 4 men	3 1-4	54,055 5-9	9.85	3.00	19 7-10c.

\*The cost shown includes handling and hauling to the dump.

†Cleaning gutters on rough streets 4c. additional, total 17c.

‡Cleaning gutters on rough streets, 4c. additional; total 16c.

§Cleaning gutters and unpaved streets, 3c; total 23c.

The costs given include all those for labor, brooms, feed, horse-shoeing, wear and tear of harness and all equipment.

It will be noted that there is considerable disparity in the costs shown above, the average per 1,000 yards running up as high in one route as 45 cents. This difference is entirely due to the amount of traffic: For instance, Route No. 3, where the cost is 45c., is in the busiest portion of the business district.

In Routes Nos. 1 and 9 and Brambleton information is given in the footnotes as to cost of cleaning gutters on rough streets. As stated elsewhere in this article, in divisions where there is some Belgian block paving, the sweepers are required to keep the gutters clean, and in the above statement 3 or 4 cents is added to cover the cost of this work.

**Collection of Household Trash and Refuse.**—Collections of garbage, trash and ashes are made daily over the entire city. For this work the city is divided into six districts, and these districts are again divided into smaller sub-divisions, each of which has one trash cart and one garbage cart. The department owns and used the following equipment in collecting and disposing of the material handled:

- 1 steel double wagon, capacity 4 cubic yards,
- 1 steel double wagon, capacity 3 cubic yards,
- 33 wooden carts, capacity 1½ cubic yards each.

The average weight of loads hauled in these carts is 1,383 pounds, or five tons to eight loads.

The average cost of hauling garbage and trash is 60 cents per unit, i. e., one cart-load averaging 1,383 pounds.

**Disposal.**—The garbage collected in the old portion of the city is incinerated, the plant used for this work being owned and operated by the city. The amount of garbage incinerated averages 20 tons per day and the cost of incineration is 52½ cents per ton. In this connection, it may be stated that a contract has been awarded for the erection of two additional incinerating plants, and the work of building them is now in progress.

To avoid the long haul which would be required, the garbage collected in the suburbs is deposited on low land and then covered over with good filling. Refuse other than garbage is dumped in marshes and covered with sweepings or ashes.

The following statement shows the amount of material of all classes collected by the department for one year:

**AMOUNTS OF REFUSE COLLECTED.**

Class.	Total Collections for the Year.			Average Daily Collections.		
	Cu. yds.	Tons.	Loads.	Cu. yds.	Tons.	Loads.
Garbage .....	67,531	22,510	45,021	216	72.1	144.3
Ashes and rubbish..	47,080	15,693	31,387	151.75	50.25	100.5
Sweepings .....	25,538	19,115	17,025	85.5	64.75	57.7

Totals .....140,149 57,318 93,433 453.25 187.1 302.5

**Finances.**—The financial statement for the last fiscal year is not available, but the budget appropriations made by the city council for salaries and wages in this department for the current fiscal year are as follows:

Superintendent street cleaning.....	\$ 1,600.00
Asst. street inspector.....	900.00
31 cart drivers 312 days at \$2.00.....	19,344.00
35 garbage cart drivers at \$2.10.....	22,932.00
2 drivers, cleaning 6th Ward, 52 days, at \$2.00.	208.00
1 man at dump pile, 312 days, at \$2.00.....	624.00
65 sweepers, 312 days at \$2.00.....	40,560.00
2 men for Sunday work, 52 days, at \$1.00 per half day .....	104.00
2 foremen, 365 days at \$2.50.....	1,825.00
1 foreman, 312 days at \$2.50.....	780.00
3 gang foremen, 312 days at \$2.50.....	2,340.00
1 blacksmith .....	780.00
1 blacksmith helper, 312 days at \$2.00.....	624.00
1 supt. of stables, 365 days at \$3.00.....	1,095.00
1 stableman, 365 days at \$2.00.....	730.00
1 night watchman, 365 days at \$2.00.....	730.00
Extra pay Sunday work, Berkley stables, 1 man, 52 days at \$1.00.....	52.00
1 crematory foreman, 365 days at \$2.25.....	821.25
2 crematory helpers, 312 days at \$2.10.....	1,310.40
1 crematory night watchman, 365 days at \$2.10	766.50
1 helper at crematory, 92 days at \$2.10.....	193.20
1 helper, crematory, 79 days at \$2.10.....	165.90
Furlough pay .....	4,538.25

Total ..... \$103,023.50

**FIRE DEPARTMENT OF MANILA.**

Manila, Philippine Islands, is the only city in those islands with a fire department worthy the name, but this one is modern and effective. Its equipment is new and consists of two Webb motor pumping engine and hose wagons, each with a capacity of 900 gallons per minute and able to carry 1,000 feet of 2½-inch rubber-lined double-jacket fire hose; two second-size Metropolitan steam fire engines, equipped with Christie tractors, each having a capacity of 700 gallons a minute; three fourth-size Metropolitan steam fire engines equipped with Christie tractors, each with a capacity of 500 gallons per minute; one American-La France 75-foot aerial hook and ladder truck, motor propelled; one Seagrave city service hook and ladder truck, motor propelled, with 50-foot extension ladder; three hose wagons, Alco electric, each with a hose-carrying capacity of 1,500 feet of 2½-inch rubber-lined double-jacket fire hose; two combination chemical and hose wag-



ons, also Alco electric, each with a hose-carrying capacity of 1,500 feet of 2½-inch rubber-lined double-jacket fire hose, and each equipped with a 35-gallon chemical tank; three combination chemical and hose wagons of the White pattern, each with a hose-carrying capacity of 1,000 feet of 2½-inch rubber-lined double-jacket fire hose, and each equipped with a 35-gallon chemical tank; two fire boats equipped with Metropolitan pumps, each with a capacity of 900 gallons per minute; two 2½-ton fuel wagons; one 2½-ton supply wagon; one chief's 5-passenger motor, 6-cylinder car; one deputy chief's 5-passenger motor car; one reserve chief's 5-passenger motor car; one city electrician's 2-passenger car; two electrician's 2-passenger motors; one 2½-ton truck in the electrical division. All this equipment was manufactured in the United States.

The equipment mentioned replaced horse-drawn apparatus. It is found by experience that motor-drawn equipment is the most practical and serviceable for the Philippines, as horses suitable for pulling fire apparatus and the forage to keep these horses must be imported from the United States or from Australia, the combined cost of which has been found too high.

## FIRE PREVENTION AS A MUNICIPAL FUNCTION\*

### Methods and Results in New York—Work in Ohio, Pennsylvania, Michigan and Iowa.

Municipal fire prevention is comparatively new. Though the fire waste in this country amounts, in actual cash, according to a government estimate, to about \$600,000 a day, or \$25,000 an hour, and has been such for many years, we have given little thought as yet to scientific measures for reducing this enormous waste. The per capita fire loss in this country is five times as great as that of any country of Europe.

The first serious attempt to develop fire protection as a municipal function in this state (New York) was the enactment in 1911 of an amendment of the Greater New York charter creating a bureau of fire prevention in the fire department. Through this bureau, the fire commissioner enforces laws and ordinances and regulations of the fire department itself for the prevention of fires and the making safe of buildings.

The character of results obtained by the New York bureau of fire prevention is indicated in the following statement of important requirements of the bureau complied with during the first three months of 1914.

Sprinkler systems installed.....	20
Additional exits, stairways and fire escapes.....	61
Repairs and extension to fire escapes and doorways..	231
Structural alterations, fireproofing, etc.....	1381
Repairs to electrical equipment.....	475
Removal of dangerous conditions in heating and power plants .....	299
Installations of miscellaneous fire appliances, etc....	2583
Installations of interior fire alarm systems.....	6
Installations of tested and approved fire drills.....	46
Hazardous occupancies removed or discontinued....	170
Quantities of combustibles in storage reduced.....	49
Approved storage systems for combustibles installed..	9

Much difficulty was experienced in making the theatres obey the requirements until they were notified that their licenses would not be renewed until the orders of the bureau were obeyed.

Among the most important innovations introduced into fire prevention work in New York are the monthly housekeeping inspections by the uniformed force. Since

every building in the city, other than private dwellings, is visited once a month, the inspections cannot cover all questions of structural conditions, but the men are directed to call attention of the persons in charge of buildings to such obvious hazards as accumulations of rubbish and to defects in standpipe equipment.

More than 100,000 such inspections are now being made each month in New York City. They have resulted in an enormous cleaning up of rubbish piles, which are acknowledged to be the principal fire breeders. In the course of a year, these housekeeping inspections should show results in a reduction in the number of fires.

The moving picture theatres are now being used in the campaign of fire prevention education, and the possibilities of the work are enormous. The fire department is co-operating in the preparation of moving picture scenarios that will carry fire prevention warnings.

Other states have made progress in fire prevention work, and those foremost in this movement are Ohio, Kansas, Indiana, Pennsylvania, Iowa, Texas, Illinois, Michigan, Missouri, Louisiana, Nebraska, Maine, Virginia and Wisconsin. In more than forty states there are now state fire marshals whose authority has been recently enlarged by the legislature to include distinct fire prevention work.

In Ohio much of the fire prevention work is being done by the uniformed force. There are vigorous fire prevention bureaus in Columbus, Cleveland, Cincinnati and Akron. A very important feature of the Ohio fire prevention work is the enforcement of the state building code which came into effect in 1911. Fire marshals and chiefs of all fire departments are responsible for carrying out the fire prevention regulations of this code.

In some cities in Pennsylvania there exists a certain amount of division of authority between the building inspectors, the fire department and the fire marshal. There is an effort on foot to co-ordinate all these departments, however, and considerations of fire prevention are carefully observed.

In Michigan the building inspector and the fire marshal work together, being empowered by statute to "jointly inspect buildings as to safety in reference to fire, fire stops and exits."

In Iowa there has been a comprehensive fire prevention law in effect since 1907, conferring fire prevention powers on fire marshals, chiefs of departments and clerks of townships.

A unique feature of the Ohio law is that teachers in all public and private schools occupying buildings more than one story in height are required not only to have regular fire drills but to teach prevention to the children.

Not long ago the Wisconsin legislature conducted an extensive investigation into the cause of fire in 44 American cities with annual losses of about \$44,000,000.

The following partial tabulation is the result of the investigation:

Cause of fire.	No. of fires.	Percent of all fires.
Rubbish .....	4452	10.53
Matches .....	2663	6.30
Chimneys, defective.....	2136	5.47
Cigars, cigarettes and pipes.	1681	3.97
Flues, defective.....	1346	3.18
Furnaces, defective.....	1120	2.74
Electric wiring, defective...	1097	2.59
Ashes, hot.....	809	1.91
Candles .....	761	1.80
Stoves, defective.....	682	1.61
Stoves, overheated.....	599	1.42
Gas jets, curtains, etc.....	492	1.16

It will be noticed from the items on the list that most of the fires may be attributed simply to carelessness and

\*Extracts from a speech by J. O. Hammitt, chief of Fire Prevention of New York City, before the Convention of Mayors of New York State.

bad housekeeping. It has been estimated by experts, and it seems to be a reasonable approximation, that carelessness will account for not less than 60 per cent of the fires. All the items mentioned on the list need not have been mentioned at all if people had trained themselves to "think beforehand."

The "human element" enters largely into the creation of our fire loss. An extensive campaign throughout the country showing people that they are being taxed about \$27 per year for fire charges would probably awaken the public conscience concerning the supreme importance of fire prevention.

### STREET CLEANING IN CLEVELAND

By GUSTAVE H. HANNA, Superintendent of Street Cleaning, Cleveland, O.

Experience at the head of the Cleveland street cleaning department has taught me much about the cost of street cleaning which the average man ought to know but which he overlooks in the ordinary discussion of paving questions.

It is cheaper to clean a street that has a smooth durable surface than one that bears an uneven or rough surface, whether that surface is the result of imperfect construction, or character of material used, or the result of wear and tear. Almost any man knows this, if he stops to think of it. What he does not know is the great difference of cost between cleaning streets of different materials, regardless of the question of wear.

The average man, even the average official, overlooks the element of cleaning when calculating the cost of a pavement. He is used to reckoning the first cost plus the cost of repairs. I maintain that the third item, cleaning, is even more important than the cost of repairs. Any good street that has received proper attention has had more money expended upon it in sweeping and flushing in ten years than in maintenance. It is also true that the difference between economic cleaning and costly cleaning due to the difference of structure or material is greater than the average discrepancies in repair bills.

In our methods of cleaning streets we try especially to avoid the formation of a film of slime over a street, which is very difficult to be removed when it is once formed. The film consists of ammonia from horse droppings which leaches out under damp conditions and com-

bines with road dust. To avoid this dampness we avoid sprinkling. Such water as is used comes from a flusher under pressure which washes the street perfectly clean. This treatment, combined with the services of a sweeper, keeps our brick pavements clean.

In giving detailed costs of this method, I will take as my example a brick residence street with an average traffic of one vehicle per minute. I also want it understood that when I say cleaning I mean just what I say. A cleaning bill can always be cut by neglecting the street, and the result which I am aiming for is good, presentable condition the year round, without wastefulness in the use of funds.

On such a street one "white wing" should be able to care for a mile of paving and to cover this mile every day. Horse droppings dry quickly, and the wind from passing vehicles drives the refuse to the gutter, where nine-tenths of the sweeper's work can be done. He should sweep one pile of refuse to the block and it will require the services of a wagon one hour per day to remove the piles. Flushing should occur once a week.

The calculation of cost, therefore, would include one sweeper at \$2 per day, a wagon at 60 cents per hour, a helper at 25 cents per hour and a flusher at the rate of \$2.50 per week, which, divided by six to arrive at a daily basis, gives about 42 cents. The daily cost of cleaning a mile of such pavement would therefore be approximately \$3.27. On the same basis of results, I would add 35 to 40 per cent for a pavement worn through faulty construction, or about \$400 a year, equal to 10 per cent (interest and depreciation) on \$4,000, which could be economically added to the construction cost of the pavement to secure easy cleaning.

The taxpayer ought to remember that a saving of \$500 per year in the cost of cleaning a mile of street means \$5,000 in ten years, or the price of several blocks of new pavement. He should also remember that economical cleaning means satisfactory cleaning, for paving funds frequently get low in the average city and make it impossible to keep every street ideally clean. Under such conditions it is the street which yields readily to a moderate expenditure which is the cleanest street.

### STREET CLEANING COSTS AT NEWPORT.

The street cleaning force in Newport, R. I., is divided into five sections, two of which cover the city proper, two cover the suburban districts (including mowing of grass, weeding, etc.), and the fifth cleans Bellevue Avenue. In 1913, street cleaning was begun April 3 and was continued until Nov. 5. The total number of loads removed was 8,620, which were gathered from 64.52 miles of paved streets and 27.10 miles of dirt roads. The total mileage cleaned once was 3,420 and the garbage was 53,853,304, at a cost of \$29,741.62, or about 55 cents per 1,000 square yards.

Four men, who are employed throughout the year, cleaned and flushed the 48 miles of sewers at an average cost of \$54.84 per mile.

Street sprinkling became necessary on May 1st and 14 carts were then put in service and continued until Nov. 27. The total cost of watering was \$9,597.78, or about \$184.57 per mile for the season. Fifty-two miles of streets were watered twice daily. Dustoline gave very good satisfaction as a dust layer and 45,132 gallons were purchased and applied to 35 miles of roadbed having an average width of 20 feet, at a cost of \$115.23 per mile. The total cost of applying was \$4,043.54; the cost per gallon applied was \$0.0896 and the cost per square yard treated varied from \$.0032 to \$.0084.



CLEVELAND WHITEWING AND OUTFIT.



TABLE NO. 1—HORSE-DRAWN APPARATUS.

City.	Popu- lation.	Pumping engines.	Chemical engines.	Hose wagons.	Hose reels.	Chemical and hose.	Ladder trucks.	Aerial trucks.	Water towers.	Chief's buggies.	Exercise or fuel wagons.
<b>California:</b>											
Santa Ana .....	12,500	..	..	..	2	1	1	..	..	..	..
<b>Connecticut:</b>											
New Milford .....	5,000	..	..	1	..	..	1	..	..	..	..
<b>Indiana:</b>											
Vincennes .....	18,000	..	..	2	1	1	1	..	..	1	..
<b>Massachusetts:</b>											
North Adams .....	22,150	..	..	1	3	1	2	..	..	1	1
Orange .....	5,670	1	..	1	2	1	1	..	..	..	..
<b>Minnesota:</b>											
Hibbing .....	10,000	..	..	..	1	2	1	..	..	1	2
<b>Nebraska:</b>											
Havelock .....	3,500	..	2	..	3	..	1	..	..	..	..
<b>New Hampshire:</b>											
New Market .....	3,400	..	..	1	..	..	1	..	..	..	..
<b>North Carolina:</b>											
Greenville .....	5,000	1	..	1	6	..	1	..	..	..	..
<b>Ohio:</b>											
Medina .....	3,000	1	1	1	1	..	1	..	..	..	..
<b>Pennsylvania:</b>											
Corry .....	7,000	..	..	1	..	1	..	..	..	..	2
<b>Canada:</b>											
Calgary, Alta .....	81,221	1	1	4	..	1	1	1	..	..	1

TABLE NO. 2—MOTOR-PROPELLED APPARATUS.

City.	Chief's cars.	Hose wagons.	Chemical engines.	Chemical and hose carrying ladders.	Hook and ladder trucks.		Gasoline pumping engines.				Repair wagons.	Make of tractors.	
					Gasoline.	Electric.	Without hose or chemical.	With hose.	With chemical.	With hose and chemical.			
<b>Florida:</b>													
Gainesville .....	1	..	..	..	..	..	..	..	..	1	..	.....	
<b>Indiana:</b>													
Decatur .....	..	..	..	1	..	..	..	..	..	..	..	.....	
Vincennes .....	1	..	..	1	..	..	..	..	..	..	..	.....	
<b>Iowa:</b>													
Des Moines .....	2	..	..	8	5	..	..	3	..	..	..	14 American-La France, 3 Seagraves, 2 Chalmers.	
<b>Minnesota:</b>													
Hibbing .....	1	..	..	1	..	..	..	..	..	..	..	.....	
<b>Ohio:</b>													
Medina .....	1	..	..	..	..	..	..	..	..	..	..	.....	
<b>Canada:</b>													
Calgary, Alta. ....	2	3	1	..	1	1	..	2	..	..	1	.....	

TABLE NO. 3—GENERAL FIRE DEPARTMENT DATA.

City.	No. of fire houses.	Number Full time.	of men Call or volunteer.	Fire prevention squad?	Two platoon system?	Building inspection by firemen?	Will your hose couplings fit all nearby cities?
<b>California:</b>							
Santa Ana .....	1	2	28	....	No	....	Yes
<b>Connecticut:</b>							
New Milford .....	1	..	90	....	....	....	Yes
<b>Indiana:</b>							
Decatur .....	1	2	17	No	No	No	Unknown
Vincennes .....	4	17	..	Yes	No	Yes	Yes
<b>Massachusetts:</b>							
North Adams .....	5	8	60	No	No	No	Yes
Orange .....	1	..	43	....	....	....	Yes
<b>Minnesota:</b>							
Hibbing .....	3	26	..	Yes	No	Yes	Yes
<b>Nebraska:</b>							
Havelock .....	3	..	60	....	....	No	Yes
<b>New Hampshire:</b>							
New Market .....	2	..	50	....	....	Yes	....
<b>North Carolina:</b>							
Greenville .....	7	1	..	No	No	No	Unknown
<b>Ohio:</b>							
Medina .....	1	..	..	....	....	Yes	Yes
<b>Pennsylvania:</b>							
Corry .....	2	2	..	No	No	Yes	No
<b>Canada:</b>							
Calgary, Alta .....	10	93	..	No	No	Yes	Yes

TABLE NO. 4—HAND-DRAWN APPARATUS.

City.	Hose reels.	Hose carts.	Hose wagons.	H. & L. carts or trucks.	Chem- ical wagons.	Pump- ing engine.
<b>Connecticut:</b>						
New Milford....	3	..	..	..	..	..
<b>Indiana:</b>						
Decatur .....	..	1	..	1	..	..
Warsaw .....	3	..	..	1	..	..
<b>Massachusetts:</b>						
North Adams....	3	..	..	1	..	..
<b>Nebraska:</b>						
Havelock .....	..	3	..	1	2	..
<b>Nevada:</b>						
Carson .....	..	2	..	..	1	1
<b>New Hampshire:</b>						
New Market....	2	..	..	..	..	..
<b>North Carolina:</b>						
Greenville .....	6	..	..	..	..	..
<b>Ohio:</b>						
Barnesville ....	..	2	..	1	..	..
<b>Pennsylvania:</b>						
Miners Mills....	..	1	..	1	1	..

## ADDITIONAL FIRE DATA.

Since printing the tables in our issue of October 8, giving information concerning the equipment of fire departments in more than seven hundred cities, we have received data from a few additional cities which are presented in the above supplementary tables.

## EXHIBIT OF STREET CLEANING APPLIANCES.

The exhibition of street cleaning and refuse collection appliances to be held in New York, to which we have already referred, has developed beyond the original plan or expectations, and in consequence changes have had to be made in the location from one of the stables of the Department to the armory of the First Regiment Field Artillery, located at Broadway and 68th street. Thirty-seven manufacturers and inventors have already asked for floor space, and a few more are expected to apply before the 14th, the last day for receiving applications. No charge of any kind is made for floor space, nor will there be any admission fee. City officials and others from all cities are invited to attend the exhibit and it would certainly seem worth the while of all who are interested in this branch of municipal service to do so. The exhibition will be held from November 23rd to 28th.

In addition to the other exhibits, the city will have thirty pieces of its apparatus on view, many of them antiques. On the opening day the attention of the citizens will be attracted to the exhibit by a street parade of 500 uniformed men of the Street Cleaning Department, headed by bands of that Department and of the Police and Fire Departments.

The exhibitors who have already applied for space are as follows:

American Process Company, New York City; Austin-Western Road Machinery Company, Chicago, Ill.; Baker-Barron, Inc., New York; B. Blankfort, Brooklyn, N. Y.; George Bowen, Brooklyn, N. Y.; Robert Cunningham, Brooklyn, N. Y.; Commercial Truck Company of America, Philadelphia, Pa.; William Dubocq, Brooklyn, N. Y.; Albert Edwards, Brooklyn, N. Y.; Eberhart & Son Company, New York City; Four Wheel Drive Auto Truck Co., Clintonville, Wis.; General Vehicle Company, New York City; Good Roads Machinery Company, Inc., New York City; E. W. Hill, Jersey City, N. J.; Van Cleve Holmes, New York City; W. I. Hutchinson, New York City; Chas. Hyatt & Co., New York City; A. Jacobson & Son, Brooklyn, N. Y.; Hugo Kastor, New York City; B. Kern & Co., Sandusky, Ohio; The Lansden Company, Brooklyn, N. Y.; J. C. Marriott, New York City; Merritt Street Sweeping Machine Company, New York City; Model Refuse Collection System, New York City; O'Neill Implement Company, Marseilles, Ill.; I. Wilbur Parrott, Philadelphia, Pa.; Sanitary Ash and Garbage Can and Wagon Company, New York City; Sanitary

Wagon Company, Washington, D. C.; The Standard Wire Company, New Castle, Pa.; Sterling Salt Company, New York City; Studebaker Corporation of America, New York City; Tarrant Mfg. Company, Saratoga Springs, N. Y.; Universal Road Machinery Company, Kingston, N. Y.; Ward Motor Vehicle Company, New York City; Watson Wagon Company, Canastota, N. Y.; Wirt & Knox Mfg. Company, Philadelphia, Pa.; Leo Witkowski, New York City.

## GARBAGE COLLECTION IN FORT WAYNE.

By KARL W. DETZER.

For eight months past Fort Wayne has been collecting its garbage after a plan which has so far been adopted by very few cities in this country—requiring householders to drain it and wrap it in paper. Until the early part of this year garbage was collected twice each week in nearly every part of the city and in some parts three times a week. The garbage incinerator was so far taxed beyond its capacity that garbage stood in great heaps for days at a time and an extension of the plant seemed necessary. Two collections a week were thought too few, during the summer at least, and the alleys were fouled with the drippings of the collection wagons.

All of these are reported to have been remedied by the wrapping of the garbage. One collection a week, and even one in two weeks in some outlying sections, is considered sufficient, and considerable saving in cost of collection is thus effected. Alleys are no longer fouled by the garbage wagons and scattered garbage is rarely found. And not once in the past four months has the incinerator been overloaded.

The city papers are given most of the credit for persuading the citizens to wrap their garbage. They published articles asking housewives to follow these three rules:

"Drain your garbage thoroughly before you place it in the can. Strain all juices out of it and have it dry as possible."

"Wrap the garbage in newspapers. Line the can with paper. Never throw any unwrapped garbage in the can."

"Throw tin cans into another barrel, never into the garbage can, and keep the lid of the garbage can on tight."

For a time hardly a day passed without some reference to the matter. In two weeks the first results were noted, in two months they were very apparent and today practically every housewife complies with the rules.

Health authorities enforce the last of the three rules, and garbage cans are kept covered. No excuses are accepted after the second discovery of a violation on the same premises. Housewives have become so accustomed to the methodical collection, that except on collection days one may go for squares through the alleys of the city without seeing a single can. On the day of collection the house-keeper carries the tightly closed can to the alley, and after the garbage has been removed returns it to the back steps, where because of its dryness and its heavy paper wrapping, it is odorless as long as the lid is on tight.

## REMOVING POLES AND WIRES FROM PHILADELPHIA STREETS.

During 1913, the net decrease of overhead wire belonging to the city of Philadelphia was 91 miles and the number of poles 682. The same cannot be said of the wires belonging to private or public service corporations. The increase for the year was 21 miles of wire and 2,109 poles. The total length of overhead wires is steadily increasing, the total extent of such overhead work reaching the stupendous total of 84,077 poles and 18,810 miles of wire. An effort is being made to secure the passage of an ordinance giving the chief of the electrical bureau power to prescribe each year streets to the extent of 20 miles from which all overhead wires shall be removed.



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## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

## NOVEMBER 12, 1914.

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## Fire Preventive Measures.

It is by no means a new discovery that "an ounce of prevention is better than a pound of cure," but important new applications are being made of it. Most of the "Safety First" admonitions are based upon the general idea that a minute's precaution is better than a month's salary paid to the doctor.

But perhaps its most direct application recently made in public affairs has been in the measures taken to prevent fire, and to minimize loss of property and of life in case of fire. Several courses are followed with this aim in view; among them, fire-proof or fire resistant construction voluntarily by owners; "fire limit" restrictions by city ordinance, and education of the public to take precautions against starting fires. A modern and promising method of disseminating instruction is by use of moving pictures, films being prepared with this end in view.

Efforts have been made to persuade the people that it would pay them to build fire resistant houses, but not much reliance should be placed on this. The government has calculated that the property loss by fire in this country is about \$2.25 per year per capita. Assuming half of this loss in residences, and we have, say, \$9 for the average residence containing eight persons. Assuming 10 per cent interest and depreciation (or obsolescence), \$90 could be spent in making the average house absolutely fireproof, or \$45 in reducing its fire risk by one-half—sums evidently inadequate for this purpose.

But to buildings whose contents are more valuable

than the average residence this does not necessarily apply; in addition to which we have, in connection with many of them, the great loss of business profits interrupted by destruction of store or mill and the loss of wages to those employed therein. It is such considerations which warrant the enforcing of building restrictions within the areas largely occupied by business or manufacturing properties.

But combined with this and even more important would seem to be the education of all citizens, and especially of the children, to be ever mindful of the results of carelessness with fire, and what particular actions or omissions are the causes of most fires. Second only to which (if indeed they are second) would be the systematic inspection of all buildings by firemen, fire marshals or others; and the reduction of the number of incendiary fires. These preventive measures are especially effective in reducing the fire risks on residence property, which is seldom made fire resistant.

While self-interest may be relied on to a certain extent to secure fireproof construction in factories and similar buildings, prevention of loss of life by fire or panic in such buildings must generally be secured by public action in the form of adequate ordinances rigidly enforced. Fire escapes with easy access to the same are now commonly provided for; but we believe that fire drills should be required by law in all factories, as they are now in the public schools in many cities. This would tend not only to prevent the panics and ignorance of outlets which are responsible for so many deaths, but also the blocking of such outlets or of the direct passage-ways to them. These fire drills might well be held in the presence of the inspector on his regular rounds of inspection of the buildings.

A few years ago an awful loss of life was caused by fire in a factory building in New York, partly because the doors to the fire escapes were locked, as was shown in a trial of the owners. In spite of this, the same owners were, within three years, fined for keeping locked the fire escape doors to their re-constructed building. Fire drills ordered without warning by an inspector would help to reveal such violations of the law. They would also be a more certain test of the adequacy of the fire escapes than any theory or deductions from occasional experiences.

## Prevention of Street Littering.

Less is said about the saving which would be effected if we could prevent street dirt. When most city streets were either dirt or macadam, or continually tracked with dirt from such streets which crossed them every few hundred feet, the other sources of dirt were comparatively insignificant. But with hard pavements which abrade very slowly, all dirt which reaches them is the result of thoughtless or deliberate disregard of the obligations of neatness and economy; except for leaves and horse droppings, and with the increase of automobiles these latter are somewhat decreasing.

Papers and rubbish of various kinds thrown into the street by pedestrians and from stores, residences and trolley cars, and droppings from wagons carrying dirt now form the principal materials found in street sweepings which prevent their sale as unadulterated manure, and add a considerable percentage to the cost of cleaning.

Figures from a number of cities of medium size indicate the cost of street sweeping as from 50 cents to \$1.50 per capita per year, or say \$3 to \$10 per family. And probably one-third to one-half of this could be saved if careless littering of the street were eliminated—an amount which any taxpayer with any idea of economy should consider worth a little thoughtfulness.

Even more important is the effect on the appearance of the city of such littering, especially with papers and fruit skins. Even when the street is cleaned by the patrol system, such matters must generally lie for an hour or more before they are removed, a reproach, not to the street cleaner or to the street cleaning departments, but to the citizens, and to the law makers or else the police and the courts which fail to enforce existing ordinances.

The problem of removing street dirt is occupying more and more attention. It is time that the prevention of a considerable part of it be more seriously considered, both by enforcing ordinances and by creating a popular disapproval of the slovenliness of street littering.

## PASADENA STREET DEPARTMENT

### Force and Equipment Employed by the Department —Work Done and Cost of Same—Cleaning, Oiling and Sprinkling

To keep the streets cleaned, repaired and oiled or sprinkled, clean the vacant lots and parks and maintain its municipal oil storage plant, Pasadena, Cal., requires the services of John Beyer, superintendent, one deputy, one assistant, one chief inspector, 2 accountants, one clerk, one foreman, 8 street inspectors, one blacksmith, 6 roller engineers and sweeper operators, one mason, one sewer inspector, 13 teamsters, 15 laborers and 27 street sweepers. Also five street sprinklers are employed under contract.

During the three months in which most of the parkings are cleaned, the number of laborers is increased to about 25 and in addition to these another force of 25 men is employed for a couple of months to clean vacant lots. All laborers are paid at the rate of \$2.40 per day. The streets are sprinkled under a contract rate of 52 cents an hour for each tank employed, water being furnished by the city.

The equipment of the department includes 23 horses, one small and 3 large steam rollers, a vacuum sweeper and a motor oil truck, in addition to the usual sprinkling, flushing and dump wagons.

A regular route covering about 45 miles of street is swept each day by a force of 27 men. The area of the streets thus swept is approximately 1,056,000 square yards per day and the average cost is 1.9 cents per square yard per annum or \$445.50 per mile of route per annum. The average cost per mile per day is \$1.45. There is also, in addition to the regular sweepers, a roving gang, composed usually of 5 men which sweeps the streets not in the regular route outlined above. These men are paid the same wages as the regular sweepers.

Alternate routes are covered each night by the vacuum sweeping machine. Two horses and one operator are required and the machine consumes about 3 gallons of gasoline and one quart of lubricating oil per day. The routes covered approximate  $8\frac{1}{2}$  miles each. On this basis, the average cost of operation is 55 cents per mile, but this does not include repairs, which have been numerous, or depreciation, which has been great owing to the large number of accidents.

Such portions of the streets sweepings as are salable are removed by a contractor, who is paid \$90 per month for this work. The remainder of the sweepings, including those collected by the roving gangs, are removed by the department teamsters, four men and teams being employed. No data are available on the yardage, tonnage or mileage in this work.

The department maintains a force of men, about 8 in number, for the purpose of cleaning weeds, etc., from the

city's parking. No records are kept showing the amount of work done.

It is the duty of the department to oil, sprinkle and maintain streets. On improved streets, the average scarifying and re-oiling work requires an expenditure of about 0.9 cent per square foot, or 8.1 cents per square yard. An average depth of  $\frac{3}{4}$  inch of new rock and oil is applied. Following are itemized costs.

Item	Cost per sq. yard. cents.
Spreading rock .....	0.40
Teams, plowing, grading, etc.....	.70
Rolling and scarifying.....	1.50
Sprinkling and oiling .....	.25
Oil, including haul .....	1.25
Rock, sand, and gravel.....	3.25
Supervision .....	.75

Cost per square yard (cents)..... 8.10

Where the use of equipment was necessary, depreciation is included in the above figures. Oil is applied at the rate of 0.4 gallon per square yard, and the average spread of rock for the same area is 50 pounds.

No data are available showing the miles of dirt streets oiled during the past year, but figures based on work performed prior to the acquisition of the motor oil truck (see Municipal Journal for November 5) and done in the previous year, indicate that the average amount of light oil used for this work was 3.0 gallon per square yard for each coat and the total cost was 0.8 cent per square yard. The use of the motor oil truck will, it is thought, reduce this cost considerably in the future.

The sprinkling of streets with water is performed under a contract calling for 52 cents per hour for each wagon. Owing to the rapid improvement of streets, the mileage sprinkled has largely decreased in the past year. This sprinkling with water has been considerably more expensive than oiling with light oils and requires the constant use of equipment and men for about 283 eight-hour days per year. The present routes extend about 24 miles and to sprinkle these requires about 85 gallons of water per square yard per year or about 0.3 gallon per square yard per application.

The capacity of the sprinkling tanks is 600 gallons each, a quantity sufficient to cover 2,000 square yards with one application and 3,500 gallons per mile are needed. The average cost of distributing one tank of water is  $19\frac{1}{2}$  cents, which is equivalent to a cost of \$1.13 per mile per day or \$319.80 per mile for a year of 283 days. The average cost of sprinkling a square yard is 2.9 cents annually.

During the past season the lot-cleaning department, under the direction of the street superintendent, posted notices to clean the weeds off about 2,000 vacant lots, and subsequently cleaned about 1,400 of these lots. While the areas varied considerably, the average expense charged to the owners was about \$1.80 for each lot. The city was divided into four sections to facilitate the work and a foreman placed in charge of each section.

The department maintains a municipal oil storage plant from which oil is sold. The total sales amounted to \$12,687.18, thirty car loads or 7,856 barrels being handled at a cost, exclusive of the purchase price, of  $16\frac{1}{4}$  cents per barrel. This total included 9 cents per barrel for labor,  $4\frac{1}{4}$  cents for steam for heating purposes and 3 cents for general expenses. The profits of the department, about \$2,300, have paid for several strips of road improvement. Road oil is now being sold for 3.3 cents per gallon, with the prospect of a reduction in the near future, while light road oil (sometimes called fuel oil) is selling at 2.2 cents per gallon. Every barrel handled by the city is tested by the city chemist.



# The WEEK'S NEWS

Road Work in Michigan and Illinois—Paving in Watertown, N. Y.; Pottsville, Pa.; Chicago, Ill.; Boston, Mass.;  
Wilmington, Del. and LaSalle, Ill.—Sewer Work in Baltimore, Md., and Cincinnati, O.—Water Supply of  
Pennsylvania—Fort Worth's Reservoir—Lighting in Minnesota Cities—New Motor Fire Apparatus—  
Commission and City Manager Plan Victories—Charter Changes in Massachusetts Cities—  
Huge Bond Issue for Houston, Tex.

## ROADS AND PAVEMENTS

### Road Work in Michigan and Illinois.

Milwaukee, Wis.—From 1910 to 1913 Michigan improved 2,437 miles of highway at a total cost of about \$7,250,000, of which the state paid \$1,500,000 in rewards to counties. This statement was made by F. P. Rogers, Michigan state highway engineer, at the opening session of the Northwestern Road Congress. Mr. Rogers said that, in addition to the rewards on ordinary roads, the state had established, through its last legislature, a system of some three thousand miles of trunk line roads, connecting the principal cities throughout the state and on which the state aid is about twice as much as on the ordinary thoroughfares, or about 46 per cent. of the cost of building, in addition to building all bridges on those highways on which the spans are greater than thirty feet. P. C. McArdle, acting chief highway engineer of Illinois, told the congress that ninety-four out of a total of 102 counties in Illinois already had laid out their state aid roads, which had been approved by the highway commission.

### City May Specify Patented Paving.

Rochester, N. Y.—An injunction restraining the city from letting the contract for a bitulithic pavement is dissolved in a decision by Supreme Court Justice W. W. Clark. The plaintiff charged that the use of bitulithic, a patented pavement, prevented competitive bidding which is required by the city charter. Justice Clark, however, ruled that the owners of the patent opened the way for competitive bidding by offering the use of their product at a fixed price. The ruling held that the adoption of specifications for a patent pavement does not prevent competitive bidding, that this has been decided in many states and that there had been no violation of the charter.

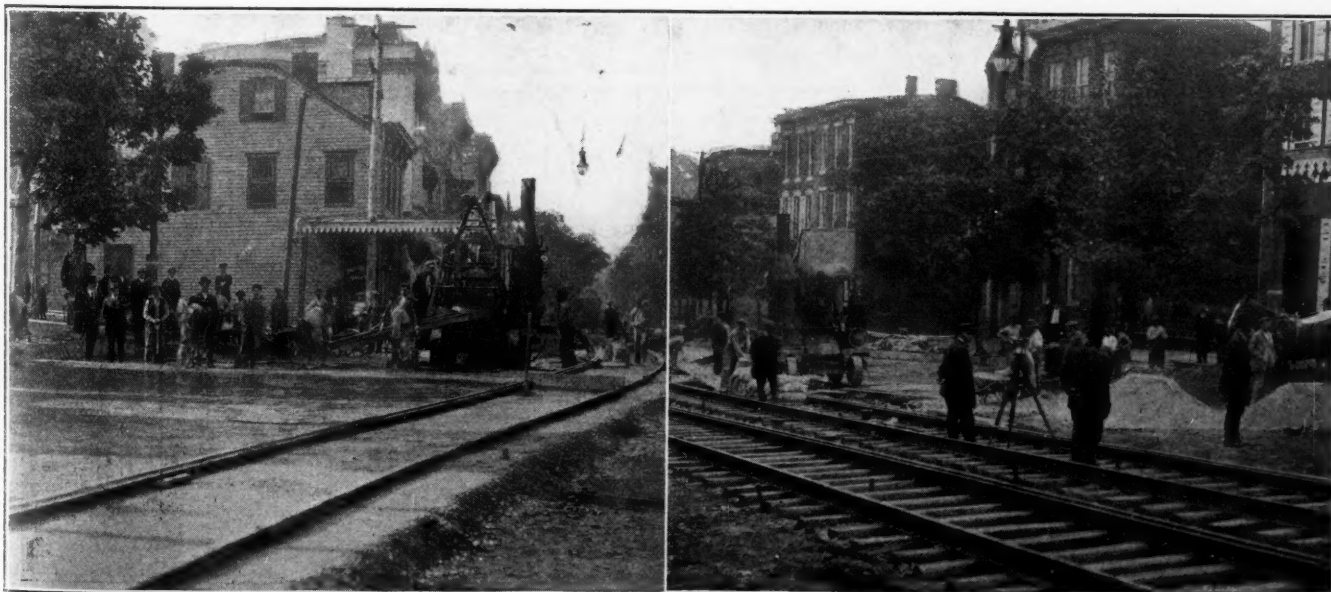
### 68 Miles of Highway This Season.

Watertown, N. Y.—Approximately 68 miles of state highways have been laid in Jefferson county this summer as compared with 28 miles a year ago. Every section of the county has benefited; 42 miles of state road has been treated

with cold oil and 27 miles with hot oil. With the exception of one or two stretches the work, which was started last spring, has now been completed. The Three Mile Bay-Cape Vincent road is being pushed forward with all rapidity while the road in Carthage village will be completed also before winter. During the summer 850 feet of new road has also been laid in underground construction at the crossing in Clayton. Next year will probably see a state road between Redwood and the county line and Philadelphia and Antwerp.

### Wood Block Paving Nearly Completed.

Pottsville, Pa.—About half a mile of wood block paving on which Michael A. Mangan, contractor, has been at work will soon be completed in the good time of fifteen weeks and another block soon started. A few years ago a mile of wood block was carefully laid on another street and its success has encouraged the new work. While the work was going on the public service companies put in new pipes, the telephone and telegraph companies put up new poles, new sewer connections were made and double trolley tracks laid. A ten-ton steam shovel furnished by the J. M. Reed Construction Co., Philadelphia, was used in excavating, of which there was 4,289 cubic yards. The blocks, for an area of 12,866 square yards is laid on a six-inch concrete foundation. Stone curbs are also being put in. The old curb stones were taken out with a crane hoist built on a truck wagon. For mixing the concrete a "Milwaukee 9" and a "Wisconsin" mixer, both made by the Milwaukee Concrete and Machinery Co., were used. A six tandem road roller was used in rolling bed and blocks. The cement was furnished by the Whitehall Portland Cement Co.; the wood blocks by the Ohio Wood Preserving Co., Pittsburgh, Pa.; Stone by the Birdboro Stone Co., and the sand came from Lizard Creek, Temple, Williamsport and Northumberland. The steel curb bars used were made by the Steel Protected Concrete Co., Philadelphia. This is the first time Pottsville has had paving done by a local contractor and the citizens and officials are well pleased with the work. The total cost of the job will be \$49,132. The illustrations show two views of the work.



Courtesy, Pottsville (Pa.) Daily Republican.

LAYING CONCRETE FOUNDATION FOR WOOD BLOCK IN POTTSVILLE, PA.

#### Favors Day Labor.

Milwaukee, Wis.—“For the average road job, it is cheaper to do the work under the day labor system than the contract system,” said A. R. Hirst, chief engineer of the Wisconsin Highway Commission, in addressing a recent session of the Northwestern Road Congress. “Better results are obtained, much less friction and much less chance of litigation,” he said.

#### New Concrete Roads Opened.

Chicago, Ill.—Three new stretches of road, the first concrete roads in Cook County and the first roads built under the new state aid road law, have been opened to the public by George A. Quinlan, county superintendent of highways. They were inspected and approved by Mr. Quinlan and H. B. Bushnell, division engineer of the state highways commission. Their cost is \$52,000, and the length of the three completed sections is nearly four miles. Under the state aid road law the state and county pay equal amounts for the improvement of certain roads to be designated as state aid roads. For this work there is this year available the sum of \$276,000, with which eighteen miles of concrete road will be built. It is hoped that fourteen miles of roadway will be completed within a short time. On the Milwaukee avenue and South Park avenue roads, the earth shoulders have not been placed, but the concrete work is finished. With a later addition to one of the new roads, the Milwaukee avenue road, of a stretch of seven miles reaching to the Desplaines River, it will become the longest concrete road in the state.

#### Three State Roads Completed.

Boston, Mass.—The completion this fall of the three great trunk routes of state-owned highways in Massachusetts has been announced by the State Commission. The three main routes completed are: The southern highway, from Boston to the New York line, by way of Worcester, Springfield, Lenox and Pittsfield; the shore route, from Salisbury on the New Hampshire line to the tip of Cape Cod; and the Connecticut Valley route up and down the state, from Agawam on the Connecticut line, passing through Springfield and Greenfield, to the New Hampshire line at Northfield. The Boston-Pittsfield route has been completed by the filling in of gaps in Mecket and Lee, the shore route by important work in Plymouth and Bourne, and the Connecticut Valley route by short bits of construction work in scattered places. Excellent progress has been made upon several other routes. Perhaps the most important of these is the northern route across the state, from Boston to the New York line, by way of Fitchburg, Athol, Deerfield, North Adams and Williamstown. The “Mohawk trail,” as that section of this route which traverses Florida mountain between the Deerfield Valley and North Adams, has been christened, has been formally dedicated and is now open to traffic. The state road on this northern trunk route has now been completed between Boston and Deerfield and between Charlemont and Williamstown. During the coming year it is almost certain

that the existing gaps in Shelburne and Charlemont will be filled in. The majority of the new roads are at least 18, and in many cases 21 or even 24 feet wide.

#### Street Work in Wilmington.

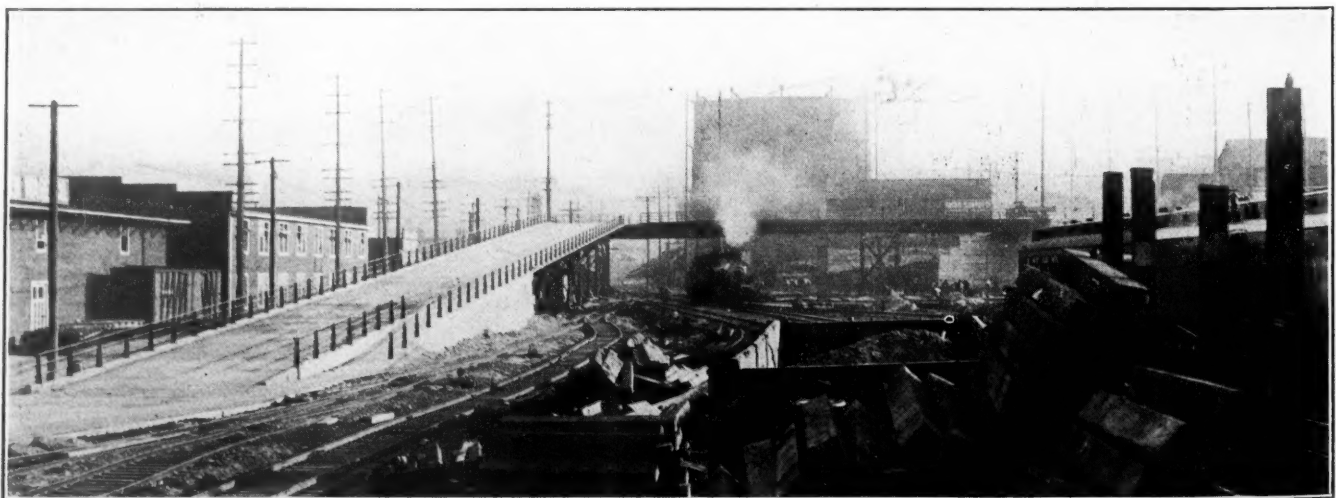
Wilmington, Del.—The street and sewer department has established a record this year in new street paving, having laid 62,162 square yards of bitulithic, vitrified brick, bituminous macadam, Portland cement, asphaltic concrete and granite blocks. The work is being done at the rate of a block a day. There still remains 39,853 square yards of streets to be completed, but on most of the streets the work is far advanced and the department expects to wind up the entire list before the end of the present season. Of the \$150,000 bond issue which was sold for the department in April of the present year only \$40,000 remained at the beginning of October to complete the work. Owing to the advanced stage of the work on all the streets remaining to be paved, however, the money will cover the expense of completing them.

#### Complete Concrete Road.

La Salle, Ill.—The Marquette Cement Co., of La Salle, has completed the Shippingsport Hill concrete roadway. The new stretch of road is of model construction and conforms in every detail with elaborate specifications furnished by the state highway commission, under whose supervision the work was done. The road is 2,200 feet long and cost \$20,000 to construct. It required 2,200 barrels of Marquette cement. Eighteen thousand cubic yards of excavation was done. It has a 7 per cent grade throughout and is banked 1 foot at the turn. It is 18 feet wide, 24 feet at the turn. The mixture was 1:1:2. The road required two months to complete. The Marquette Cement Co. paid the entire expense of the construction of this road, with the exception of \$1 formally paid in by the county. Acting Chief State Highway Engineer McArdle and Engineer Johnson of the state highway commission personally supervised the work. This is the first concrete roadway in the state constructed on a hill.

#### New Viaduct Completed.

Tacoma, Wash.—Another means of speedy and safe access to the waterfront of Tacoma has been opened. Traffic having been turned onto the new Northern Pacific viaduct built at a cost of \$100,000. The big work was begun in January last and, but for delay in receiving steel, would have been completed by Contractor C. J. Casseday sooner. To the viaduct proper is an approach of 200 feet of fine cobblestone paving with branch traffic arteries. The steel span across the railroad tracks is 330 feet long. One section of the viaduct is paved with creosoted wooden blocks on an 8½-inch reinforced concrete deck. From the eastern end of the viaduct steel work leads down to a sandstone approach built up at the other end. The roadway is thirty feet wide on the viaduct proper. A view of the new viaduct is shown in the accompanying illustration.



TACOMA'S NEW VIADUCT.



### Street Caves In.

Tacoma, Wash.—At a time of congested traffic the paving over the old Union Pacific tunnel on Jefferson avenue crumbled in, leaving a chasm 35 feet long, 25 feet wide and 15 feet deep. Although a huge truck had just gone over the spot and automobiles were continually passing, no accidents resulted from the cave-in. Immediately the gas mains broke and the escaping gas sent a spout of water high into the air. Water which has accumulated in the abandoned tunnel was probably the cause of the collapse. Firemen and police officers watched the break during the night, as further caving in was expected.

### City Leases Its Asphalt Plant.

Columbus, O.—Permission from council to lease the use of the city asphalt repair plant when the latter is not in operation, has been given by Service Director Borden to the Cleveland Trinidad Asphalt Paving Company at 5 cents a square yard, for all asphalt treated. It is estimated the amount of asphalt will be 40,000 yards, which will bring the city in \$2,000. The city is not operating the asphalt plant because under the present law, it can only "repair" work and not "paving." The funds for repair work are exhausted. Under the new charter, the city could do the paving also and save the profit in it.

## SEWERAGE AND SANITATION

### Traveling Health Exhibit.

New Orleans, La.—Recognizing the close relation of sanitation and public health to the general prosperity of the section they serve, Southern Railway, Alabama Great Southern Railroad and New Orleans & Northeastern Railroad have arranged to handle free of charge two railway cars fitted up with exhibits by the Louisiana state board of health and attendants in charge on a tour embracing fourteen southern cities from November 4 to December 6. The tour has been arranged in connection with the meetings of the Southern Medical Association at Richmond and the American Public Health Association in Jacksonville at which these cars will be exhibited. The cars will be in charge of Dr. Dowling, president of the Louisiana board of health, and stops will be made at the following points for lectures: Birmingham, Chattanooga, Knoxville, Asheville, Danville, Greensboro, Salisbury, Charlotte, Columbia, Charleston, Blackville, Savannah, Brunswick, Atlanta.

### Sewer Tunnel Completed.

Baltimore, Md.—Mayor Preston has formally broken the last barrier that holds back the water of Jones' Falls at the mouth of the tunnel under Guilford avenue and allowed the stream to enter the big sewer. For nearly three years contractors have been working on the Fallsway project. The old bed of the falls, according to Sewerage Engineer Hendrick, will be filled up and probably used for building purposes. This work is now being carried on and when completed thousands of square feet of valuable land will have been reclaimed. This property, it is said, will revert to the original owners, and just what use will be made of it is problematical. The operations, including the viaduct, cost about \$2,000,000, according to Mr. Hendrick. The improvement gives the city a driveway 7,000 feet long, eliminates several bridges that formerly spanned the stream and redeems nearly 500,000 square feet of valuable land.

### Agree to Build Sterilization Plant.

Tarentum, Pa.—The towns of Tarentum and Brackenridge, where the spirit of municipal ownership is strong, and which have fought both the State of Pennsylvania and public service corporations for years, have agreed upon a plan for the erection of a sewage sterilization plant. It will conform with the requirements of the State Board of Health, with which department the officers of the two towns have been in conflict for nearly two years. This dispute was based upon the stream pollution at these two towns which are about ten miles above the point where Pittsburgh takes its water supply from the Allegheny River. Although Pittsburgh has one of the biggest water filtering plants in America, the State Board of Health has insisted that the

towns further up the river dispose of their sewage in some manner that will not pollute this stream. The agreement upon the sterilization plant is signed by Burgess William Bew and Secretary George H. Dickey, representing Brackenridge and Burgess E. Clay White and Secretary W. A. Gibson, for Tarentum.

### Section of \$2,000,000 Sewer Completed.

Cincinnati, O.—City Engineer Frank Krug is arranging to celebrate the completion of the first section of the \$2,000,000 Mill Creek sewer by entertaining city officials with a banquet in the conduit within a few weeks, after the finishing touches have been put on the work. Mayor Spiegel, members of his cabinet and prominent business men of Cincinnati will be among the guests.

### Cost Per Cent Contract.

Schenectady, N. Y.—For the first time in this city's history, a contract was awarded for the new connections between the city sewer system and the new intercepting system on the cost per cent basis. The bids received varied from 5 per cent to 32 per cent. The city will pay for all labor and material, while the contractor will be paid the percentage for tools, time and supervision.

### Diphtheria Epidemic.

Chadbourne, N. C.—Columbus county is suffering from an epidemic of diphtheria and it may be necessary to close the schools in this town. There are seven or eight cases reported under quarantine here. Besides the epidemic at Chadbourne, there are a number of cases of diphtheria reported in Taber, and in the lower part of the county, and it is feared that the schools elsewhere, in the county will have to be closed on account of the disease.

## WATER SUPPLY

### Water Supply Survey of Pennsylvania.

Atlantic City, N. J.—At the recent meeting of the Pennsylvania Waterworks Association, John Birkinbine, chairman of the Pennsylvania Water Supply Commission, described the survey of water resources in the State. He said that they had covered the 45,000 square miles of territory, mapped the 300 ponds and lakes, traced out the streams of the State, and prepared a recommendation of how they could be employed which would be placed in the hands of the governor and legislature.

### To Meter Ithaca.

Ithaca, N. Y.—Hereafter all users of city water whose annual bills have reached the sum of \$18 are to be placed on a meter rental basis. This rule became effective November 1. For several months past men working under the supervision of Jay W. Bishop have been busy installing meters and it is the intention eventually to install meters on the premises of all users. Under the new arrangement the city will be divided into three zones or districts for the purpose of facilitating the reading of the meters and the rendering of the bills.

### Progress of Fort Worth's Big Reservoir.

Fort Worth, Tex.—A 40,000,000-gallon reservoir and 8,500 acres of land, which covers more than thirteen square miles, will be the property of the city of Fort Worth when all the bills are paid and all claims settled for the establishment of Lake Worth reservoir. It was necessary to purchase more than thirteen square miles of land to obtain a site for the reservoir. The city has expended on this lake, up to Oct. 24, \$1,228,887.71. J. D. Trammell, chairman of the board of engineers, estimates that the total cost of the finished reservoir will be fully \$1,500,000. Six thousand acres of land have been purchased and it is estimated that 2,500 additional acres will have to be bought. The city has paid \$316,162.19 for the 6,000 acres, and it is estimated that the other land will cost \$140,000, making the land cost nearly \$500,000. The construction work has cost \$589,067.01, of which \$325,617.12 was paid to the Underground Construction Company for work up to April 7, 1913. The remainder of the work was done by the city, at an expense of \$264,049.59.

Construction work on the uncompleted conduit line from Fort Worth to the lake has cost \$95,088.33, of which \$94,200.04 was paid to the Hedges Construction Company. Engineer Trammell estimates that it will cost \$75,000 to complete this conduit line. Right of way for the conduit has cost \$4,880. Clearing land for the reservoir basin cost \$46,326.88. Construction work on the settling basin amounted to \$18,047.50. Land for this basin cost \$3,326.75. The construction of a filtration plant cost \$98,802.48. The building of the "nine-mile bridge" cost \$17,995. Sand and gravel investigations amounted to \$951.56. The city paid the board of engineers \$34,181.76, and paid for sundry engineering expenses \$2,661.39. Hauling pipe to the damsite cost \$824.

Many claims for damages have been filed against the city on account of inundations by the backwater above the dam. Some of these have been settled, but many are still pending. A legal case is holding up work on the conduit line, but Engineer Trammell says it can be completed within six months after the continuation of the work is authorized.

City officials and local citizens are divided as to whether the reservoir should be used for boating, fishing, hunting and bathing and the banks used as a municipal park for campers. One faction claims using the reservoir site for recreation and amusement will contaminate the water; the other faction contends the lake is of such magnitude that the contamination will be immaterial, especially as the water will be filtered.

#### City Opposing Rate Charges.

Paterson, N. J.—The rights of the Passaic Water Company to force factory owners in Paterson to pay meter rates for water instead of flat rates, as they have done for years, was questioned in Newark before the Public Utilities Commission in the case of the Van Riper Manufacturing Company vs. the Water Company. Incidental to the main question the commission was called upon to decide whether the contract entered into between the city of Paterson and the water company in 1895 for water supplied the city and its citizens, which was cancelled by the law of the limitations of 1910, was still operative. The commission took both matters under advisement and will render a decision in Trenton.

#### Water Company Loses Suit.

York, Pa.—The York Water Company has been defeated in the effort to induce the Pennsylvania public service commission to recommend that the attorney general proceed to restrain the city of York from enforcing its meter ordinance. The public service commission refused to act in the matter and advised that the water company take the matter into court. The York Water Company refused to acknowledge the legality of the city ordinance, passed some months ago, regulating the manner of charging for the use of water within the city limits. The company claimed the ordinance was discriminatory in that it did not provide for the installation of meters in residences where the yearly water rent is \$5 or less. The matter was taken before the state public service commission by the water company, with the request that an injunction be granted restraining the city from enforcing the law. The ordinance became effective Oct. 1, but the water company has taken no steps to comply with its provisions.

#### Successful Waterworks Give Rate Cut.

Newark, N. J.—The Board of Works, on the recommendation of Commissioner Patrick H. Ryan, has authorized a reduction in the water rate, making it \$1 flat. The reduced rate will take effect with the new quarter on the first of the year. The present rate is \$1.06, and the cut will mean a saving to the consumers using meters of approximately \$55,000. The board went still a step further and also reduced the minimum charge for the first 500 cubic feet from \$1.53 to \$1.50. For the last two years the water department has had a surplus. It is believed that it will amount to something like \$90,000 this year. As a result the commissioners suggested that a reduction be made in the rates. In explaining the effect of the reduction upon the consumers David Holmes, chief accountant of the water department, said that under the present system for a two-family house with ordinary improvements, the annual charge was a flat

rate of \$30, with an additional charge of \$3 and \$5 for the use of a hose. For \$20 at the rate of \$1 per 1,000 cubic feet the same house will get about 20,000 cubic feet a year, he said, which ought to be enough for any two families.

## STREET LIGHTING AND POWER

#### Light Rates in Minnesota Cities.

St. Paul, Minn.—Comparative rates on Minnesota gas, water and electric service collected throughout the entire state by Gerhard A. Gesell, professor of economics in the extension division of the University of Minnesota, disclose that St. Paul is paying the highest rates on gas and electricity and the lowest rate on water of any of the three largest cities in the state, Minneapolis, St. Paul and Duluth. The first two industries are privately owned and the third publicly owned. Duluth is served with both the cheapest gas and the cheapest electricity. Duluth consumers pay 70 cents a thousand cubic feet for gas for illuminating and lighting and 50 cents for heating and manufacturing supply. Electricity there cost 8 cents a kilowatt hour. No minimum rate is imposed, as in St. Paul, where the consumer is charged at a fixed rate of \$1 a month whether or not the equivalent amount of current is consumed. Minneapolis pays 1 cent a kilowatt hour less for its electric current than St. Paul, even before the 5 per cent. discount in Minneapolis is allowed. Gas bills in St. Paul also compare unfavorably with those of the two other cities: St. Paul's is 90 cents net per 1,000 cubic feet, the Minneapolis charge 80 cents and Duluth's 75 cents. Minneapolis will pay the 80 cent rate for twenty-one months from April 1, 1914. After that time the rate will be reduced to 77 cents a thousand.

#### Pasadena Plant Shows Increase.

Pasadena, Cal.—Total gross earnings of the city lighting department for September were \$13,391.60, according to the report of General Manager C. W. Koerner transmitted to the city commission through Commissioner M. H. Salisbury. This is \$233 less than for September, 1913, and the slight falling off is due entirely to the fact that the city water department is not using so much current for pumping this year as last. The receipts this year for light amounted to \$6,784.33 as compared with \$5,336.88 for the same month of last year, showing a considerable gain over last year. The output in kilowatt hours for September this year was 71,200 kilowatts less than for September of last year. On September 30 there were 7,040 meters in operation as compared with 5,201 on the corresponding date last year, a substantial gain. The output was 444,100 kilowatts compared with 515,300 kilowatts a year ago. Total gross earnings for the last three months were \$39,019.11 as compared with \$38,227.35 for the quarter in 1913.

#### Rates Reduced.

Eveleth, Minn.—It has been announced that a reduction of rates which will benefit the small user of electric current will be put into effect by the Home Electric & Heating Company of this city in the near future. A reduction of 2 cents a kilowatt will be made for those who use less than fifty kilowatts a month. This will give the moderate consumer for lighting purposes only a rate of 10 cents, less an additional 10 per cent. if paid by the 28th of the month, instead of a 12-cent rate with a 10 per cent. reduction, as under the present scale. At present the company is charging 12 cents a kilowatt for those who use from 1 to 50 kilowatts a month and 10 cents a kilowatt for those using from 50 to 100 kilowatts a month. The change of rates will give those who use less than fifty kilowatts the same rate as those who use between 50 and 100 kilowatts.

#### Plan New Lighting System.

Sherman, Tex.—Superintendent Hawe McDuffie, working in conjunction with J. N. Totter, chairman of the light committee of the Sherman Chamber of Commerce, has completed a plan for lighting the entire city. Ornamental lights will illuminate the business streets and a light will be placed at all street crossings and corners throughout the city. The new plan will be put in operation at once.



**Start Campaign for Municipal Plant.**

Lorain, O.—Encouraged by the victory of their neighbors in Sandusky, Lorain citizens are planning a municipal light election when the franchise of the Citizen's Gas and Electric Company expires. Figures compiled by experts show the city can be furnished light for 3 cents and the citizens are using these figures to start the campaign.

**Begin Installation of Lights.**

Richmond, Ind.—About 400 of the new street lights have been shipped to the city light plant and Superintendent Kleinknecht has a force of men assembling the parts. The old lights will be entirely replaced by December 15. There are enough lights ready for use to install them on one of the smaller circuits. There are six circuits in the city. Because of the change in transformers, it will be necessary to change an entire circuit in a day or there will be no light until the work is completed.

**White Way Completed.**

Arkansas City, Kan.—The new white way in this city has been completed. The white way consists of 90 ornamental standards with five lights each, the top light being 100 watts and the lower four lights 60 watts each; the top lights burn all night and the lower ones until 11 o'clock. These standards have been installed on seven and one-half blocks on Fifth avenue, and six blocks on Summit street, there being eight poles to the block on Summit street and six on the avenue. The light company of this city furnishes and installs all equipment and meets all operation and maintenance cost, for which it receives from the city a flat rate of \$3 per pole per month.

**Building New Plant.**

Washington, N. C.—The work of construction on Washington's new electric light and water plant is progressing rapidly, and the contractors hope to have the work completed, and the plant in operation early in the coming year. The power house, pumping station, filter plant, and reservoir are situated in the northwest suburb of the city, and only a short distance from Tranter's Creek. The entire plant will be modern and complete in every detail and one of the best and most costly plants of its kind in the state. The city is also having a very complete and efficient system of sewerage installed at the same time.

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**FIRE AND POLICE**

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**Investigate Fire Hazards.**

Boston, Mass.—Mayor George H. Newhall of Lynn was appointed chairman of a committee to consider the information presented to Fire Prevention Commissioner John A. O'Keefe at a hearing at which representatives of different concerns handling fireproof shingles and slate in Massachusetts were given opportunity to explain the merits of their products. There were asbestos and asphalt shingles, rubberoid shingles and English slate submitted to the fire prevention commissioner, and the dealers in wooden shingles were also given their opportunity to defend their goods. The following committee was appointed to recommend what was best to do in regard to shingled roofs in the metropolitan fire hazard district: Mayor George H. Newhall of Lynn, Capt. William Brophy of the Boston fire department of Jamaica Plain, W. W. Forbush of Boston, Chief Engineer Bunker of the Cambridge fire department and Franklin H. Wentworth, representing the Boston fire insurance interests. The conference adjourned at the call of the fire prevention commissioner, who will call it together when the committee is ready to report.

**Burns Room at Housewarming.**

New York, N. Y.—Edward F. Croker, formerly Chief of the Fire Department of New York, gave a housewarming at his new house at Long Beach at which he deliberately set fire to a room and then asked his 150 guests to sit down to an elaborate dinner without doing more than closing the door to the room in which the fire was raging. Mr. Croker

has for some time insisted that fires in residences were things that could be controlled, if they could not be absolutely prevented, and built a house to prove it, and, incidentally, to live in. It is in his belief the only absolutely fireproof and unburnable building in the world. He gave his housewarming to prove it. Mr. Croker's guests included his old Fire Commissioner, Richard Harding, of the Board of Examiners of this city, members of the Board of Underwriters, Presidents of a number of fire insurance companies, professors from Columbia University, and a number of men who have made a study of fire prevention. The family slept afterwards near the fire and in the morning the test was found to be successful.

**Fire Destroys Town.**

Shubuta, Miss.—Fire destroyed a large part of this town entailing a loss of \$150,000. Only five stores remain in the place. The Meridian fire department, 60 miles away, was summoned and stopped the conflagration.

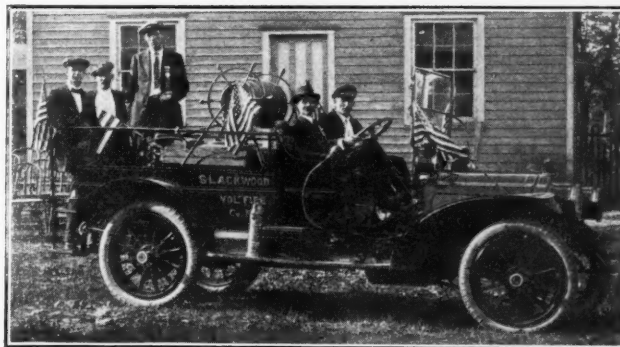
**Three Policewomen Appointed.**

Columbia, S. C.—Three policewomen have begun active duty here, and will be known as travelers' aides and assigned to the railway stations of the city. Full police powers are vested in them, and they will wear distinctive uniforms and police badges. Particular attention will be given to young women arriving on the trains who are in need of assistance, according to instructions given by Mayor Griffith.

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**MOTOR VEHICLES**

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Courtesy, Trenton (N. J.) Times.

NEW TRUCK FOR SLACKWOOD, N. J.

**New Fire Auto Tested.**

Slackwood, N. J.—The Slackwood Volunteer Fire company has just received and tested its new automobile chemical engine. A parade and speeches marked the local celebration. The apparatus is shown in the accompanying illustration.

**New Combination Arrives.**

Dunkirk, N. Y.—The new combination fire automobile ordered by the board some time ago has arrived from Buffalo from the makers, the E. R. Thomas Co. The apparatus is a combination pumper, chemical engine and hose wagon, driven by a 90 horse power motor and equipped with an electric self-starter and electric lights. The chemical tank has a capacity of 40 gallons and there is 100 feet of chemical hose. A thousand feet of hose can be carried on the truck.

**New Combination Tested.**

Lynchburg, Va.—The new motor combination fire engine and hose wagon, which has just been received by the city has been taken under its own power to station No. 1, where it will be kept until it is put in commission in the new station to be opened shortly. The apparatus was tested out by a representative of its builders, the American-La France Co., Elmira, N. Y. The engine is the most powerful in the fire department, having 200 gallons a minute more capacity than either of the three old engines in the department.

### Motorcycles in Detroit Police Department.

Detroit, Mich.—The Police Department of this city has now a fleet of twenty-six motorcycles, having replaced twenty-two old machines with twenty-four new ones. Early in 1913 the department purchased two Henderson autocycles made by the Henderson Motorcycle Company of Detroit, and a careful check was kept on the gasoline and oil consumption and on the riding qualities. It was found that this type of cycle was particularly adapted to the work of the department and that it gave better riding comfort and quicker "get-away," quiet running and lesser upkeep expenses. The two machines were therefore retained and twenty-four more added. This type is now used exclusively by the department and will also be installed in others. The fleet of cycles is illustrated here.

## GOVERNMENT AND FINANCE

### Commission Wins in Buffalo.

Buffalo, N. Y.—After years of trying Buffalo has finally won commission government. The proposition to abolish the present city government and adopt the commission plan, which was opposed by the Democrats, was carried by 14,968 and Buffalo now has the honor of being the largest city in the country governed by the commission form. The system becomes operative on January 1, 1916.

### Charter Changes in Massachusetts.

Boston, Mass.—This city refused to change its charter by a vote of 47,181 against 26,231.

Revere, Mass.—The town of Revere has voted to become a city, 1,911 in favor to 951 opposed. The city form of government will go into effect January 1. The plan provides for a mayor and a city council of nine members. The new city will consist of five wards, each ward represented by a councilman, and four will be elected at large. The city primaries will be held November 24, and the election December 8.

Attleboro, Mass.—By a vote of 1581 to 740, Attleboro chose to change from town to city form of government by accepting the charter passed by the Massachusetts Legislature this year. The election will be held on the second Tuesday in December, and those officers chosen will be inducted into office on the second Tuesday in January. The name of the new city will be changed from Attleborough to Attleboro. The executive power will hereafter be vested in a mayor and council elected one each from five wards and six at large.

Westfield, Mass.—Westfield decided against a change in its form of government by a vote of 1,284 against 1,043.

### Commission Defeats in New York State.

Lockport, N. Y.—The commission form of administration was defeated here by about 100 votes.

Auburn, N. Y.—The commission government, Plan B, was defeated by a vote of 2,801 against 1,508.

### Commission Charter to Be Drafted.

San Angelo, Tex.—At an election held here to decide the question of whether San Angelo shall select men to draft a commission form of government for this city, an affirmative answer was returned. The vote was nearly 20 to 1 in favor of the proposition.

### Officials Not Recalled.

Portland, Ore.—Mayor H. R. Albee and Commissioners R. G. Dieck and W. H. Brewster, against whom the recall was invoked, were re-elected by large majorities—14,273, 5,680 and 8,917, respectively. Under the charter provisions, the recall having failed, no further recall proceedings can be invoked against the officials who have won except at the expense of the proponents who must give a bond to cover the expenses of any such election before it is held.

### Commission Form Rejected.

Madison, N. J.—By a majority of 145 the voters of Madison rejected the commission form of government after a bitter fight, in which almost all the office holders took part, in opposition to the governmental change. The vote was 456 to 311. Working against the commission were many persons who are beneficiaries through the sale of supplies under the present system of government. The question was brought before the voters by the activities of a special government committee of the Board of Public Improvement.

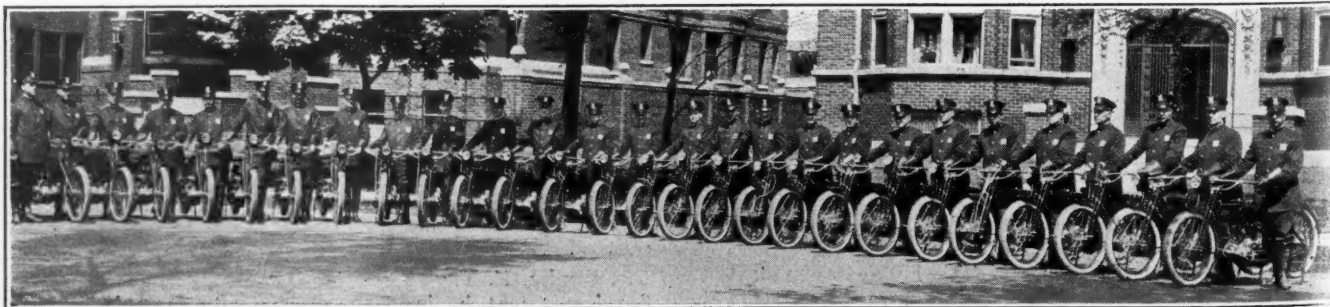
### City Manager for Niagara Falls.

Niagara Falls, N. Y.—This city voted for commission and city manager government by a plurality of 1,458. Under Plan C the council of four will have full power to enact all ordinances and perform all the legislative functions of city government, employing a city manager to conduct the city's business affairs. The relation of the city manager to the council will be similar to that of the general manager of a business corporation to its board of directors. The mayor and the councilmen will run on party tickets. The mayor will be elected for a term of four years at an annual salary of \$1,000. The councilmen will be elected at large for a term of four years. Their salary will be \$750 a year. The city officials will be elected on off years. One-half the council goes out every two years, two of the councilmen elected next year will serve only two years. The four men elected councilmen will draw lots after the election to determine which shall serve two and which four years.

The city manager will have power to employ and discharge city employees. He must report all his official acts to the council. The council will have the same power as the board of directors of a business corporation to overrule the discharge of any employee. The council will also fix all salaries, including that of the city manager, and the men elected next fall will decide what city officers there shall be. The city manager will appoint all appointive officials except the city clerk. He will be appointed by the council. Only two of the present city boards will remain, the Board of Education and the Civil Service Commission. These boards will remain as at present, their members being appointed by the mayor.

The only city officers to be elected besides the mayor and the councilmen are police justice and city judge. The city treasurer, who is elected under the present charter, will be appointed under Plan C. Under the new form of government an assessor will be appointed.

The city manager need not be a resident of Niagara Falls. He will be selected by the council for his fitness for the office regardless of his place of residence. He will be held directly responsible for the administration of city affairs according to the ordinances adopted by the council. Plan C may be repealed by the voters at any time after it has been in effect two years.



DETROIT'S SQUAD OF MOTORCYCLE POLICE.



## STREET CLEANING AND REFUSE DISPOSAL

### Cost of Sprinkling.

Grand Rapids, Mich.—In the annual report of the board of works the costs of running the various departments are given out. The street railway sprinkling was done at a cost of 12 cents per mile for a total of 10,669.85 miles. A total of 23,415,000 gallons of water was thrown at a cost of 4 cents per thousand gallons. The highway sprinkling wagons covered 35,193.05 miles of streets and threw 90,723,250 gallons. The total cost of sprinkling by this method was \$20,204.89, as compared with \$2,216.97 by the street railway company.

### Purchase New Street Cleaning Truck.

Lebanon, Pa.—The city highway department has purchased for the recently named street cleaner a street cleaning truck that will be put into service as soon as the wood block paving is completed. The truck was purchased of the Menzie's Street Cleaner Company, Troy, N. Y. The truck, which is stored at the fire house until it can be used, is a two-wheel affair with a receptacle in the center that will contain the refuse taken from the streets. The machine is ingeniously constructed, having an adjustable shovel at its base which slides along the street and when it has been filled is automatically thrown upward emptying its contents into the can.

## MISCELLANEOUS

### \$5,450,000 Bonds for Improvements.

Houston, Tex.—Bonds to the value of \$5,450,000 have been voted here by a majority of four to one for a number of improvements. Three million dollars will be used for wharf and warehouse construction on the ship channel, \$1,000,000 for drainage, \$1,000,000 for sanitary sewers and disposal plants, \$200,000 for schools and \$250,000 for park purposes. The city invited the United States government to put up \$2,250,000 against an equal amount by the city, guaranteeing to construct wharfage facilities which would remain free. In return the government promised to maintain the channel. There are now under construction two suction dredges with which the federal government will keep its part of the agreement. The bonds for this work will not be sold at once but as the money is needed, thus saving interest charges. They are 40-year bonds. With this work the city also expects to solve the problem of the unemployed for hundreds of men for two or three years.

### Grade Crossing Elimination in Portland, Ore.

Portland, Ore.—The elimination of all dangerous grade crossings along the main right-of-way of the O. W. R. & N. in Sullivan's Gulch by lowering the tracks and constructing viaducts over them at street intersections, was approved by officials of the railroad company, the Portland Railway, Light & Power Company and the Council at a conference. It is proposed to proceed with the work just as soon as the preliminary work can be done. The cost of the four viaducts will total \$466,000, according to estimates compiled by Commissioner Dieck, of the Department of Public Works. Of this, 20 per cent or \$92,000 must be met by the city from the special bridge fund, a similar amount is assessed against the property benefited and the remaining 60 per cent by the railroad companies interested. These figures do not include the cost to the O. W. R. & N. Co. of lowering its tracks, which will amount to more than \$250,000, it is said. Attorney A. C. Spencer, representing the O. W. R. & N. Co., suggested temporary viaducts instead of permanent structures, in order to save expenses in these times of financial stringency.

### City to Build Ice Plant.

Minneapolis, Minn.—Minneapolis aldermen authorized the city to go into the ice business by voting to legalize a \$400,000 bond issue. The question of whether natural or artificial ice will be used is to be decided later.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Driving on Streets—Violating Law of Road.

Moy Quon v. Me. Furuya Co.—While one may drive on any part of a street, if he violates the law of the road, or an ordinance in that respect, he must exercise a higher degree of care than otherwise, and his failure to observe such law or ordinance, resulting in injury to another, is negligence per se.—Supreme Court of Washington, 143 P. R., 99.

#### False Imprisonment—Actions.

Weber v. Doust et al.—In an action of false imprisonment for arresting a child, suspected of being a delinquent, while the court properly admitted any evidence tending to show an honest belief on the part of defendants that they had the right to make the arrest, and gave a reasonably wide latitude in admitting evidence throwing light on their motives, the exclusion of the details of an investigation of the death of a sister of the child, which resulted in the idea that she was a delinquent, was not error.—Supreme Court of Washington, 143 P. R. 148.

#### Use of Streets—Negligence—Actions—Instructions.

Parkin v. Grayson-Owen Co.—On an issue of defendant's negligence in leaving a team in the street insufficiently secured, an instruction that if defendant's driver, on dismounting set the brake hard, wound the reins around it, and then fastened one end of the hitching strap, reasonably fit, to the bit of one of the horses, and the other end to a post, the jury must consider all those circumstances in determining whether the driver was negligent sufficiently gave defendant the benefit of evidence that the driver, before alighting, set the brake and wrapped the reins around it.—District Court of Appeal, Third District, California, 143 P. R. 257.

#### Presentation of Claim—Reasonableness of Requirement.

Hartsell v. City of Asheville et al.—Where, in an action against a city for injuries, there was evidence from which the jury could have found that plaintiff was practically helpless and incapable of presenting a claim for three months after her injury, the question whether her failure to present her claim to the city within 90 days, as required by the city charter, was excusable was for the jury.—Supreme Court of North Carolina, 82 S. E. R. 946.

#### Streets and Highways—Power of the State.

Martens v. Brody, State Auditor et al.—The control of municipal corporations over public streets and highways is subject to the paramount power of the state, which may be exercised at any time; and the delegation to municipalities of such control is not for the benefit of the citizens of the municipality, but of all the people of the state.—Supreme Court of Illinois, 106 N. E. R. 266.

#### Assessment for Street Improvement—Use of Patented Article.

Simpson et al. v. City of Leavenworth.—That a contract for street improvements involved the use of a patented article did not render an assessment therefor invalid under Local Improvement Law (Laws 1911, c. 98, p. 477), § 59, providing that contracts for all public improvements to be paid for by assessments shall be let on competitive bids, where the owner of the patent stipulated with the city that the patented article would be furnished to the successful bidder, and the various bidders submitted their bids apparently relying on such stipulation, and no objection was made to it prior to objections to the confirmation of the assessment roll, though the stipulation provided that it should apply only to contracts aggregating not less than 10,000 square yards and the contract in question was for only 6,650 square yards.—Supreme Court of Washington, 142 P. R., 1155.

**Offenses—Ordinance—Construction.**

*State v. Norfolk Southern R. Co.*—Where a municipal ordinance provided that no railroad train or locomotive should block any street crossing for more than ten minutes, and any engineer violating such provision should be fined, the engineer alone is liable if a street crossing is blocked for longer than ten minutes; the ordinance applying not to the railroad company, but the engineer in control of the trains.—Supreme Court of North Carolina, 82 S. E. R. 963.

**Action Against City—Venue.**

*Piercey v. Johnson City.*—An action against a city to recover for damages to land situated in another county, caused by the city taking, under the power of eminent domain, but without condemnation proceedings, water which would otherwise flow through the land, can be brought only in the county in which the city is located, since the rule that an action for injuries to realty is local, being based on only technical reasons, or at most reasons of private convenience, must yield to the rule that a city can be sued only in the county in which it is located, which is based upon reasons of public policy.—Supreme Court of Tennessee, 169 S. W. R. 765.

**Use of Streets—License.**

*Postal Telegraph Cable Co. v. City of Newport.*—Where plaintiff city granted a telegraph company and its successors the right to occupy streets and public ways in the city with poles and wires in consideration of the payment of \$100 a year, the ordinance expressly providing that it should not be construed as granting a franchise to the company, it, on accepting the ordinance, merely acquired a license revocable at the option of the city, but while the streets were being used pursuant to such license by the telegraph company and its successors, they could not deny the validity of the ordinance, and were under an implied contract to pay the price.—Court of Appeals of Kentucky, 169 S. W. R. 700.

**Bonds—Order for Elections.**

*Ex-Parte City of Covington.*—Under Ky. St. Sec. 3069, as amended by Acts 1910, c. 106, providing that if the general council shall deem it necessary to incur any indebtedness the payment of which cannot be made without exceeding the income and revenue of the city for that year, it shall order an election to determine whether such indebtedness shall be incurred, by ordinance specifying the amount of the indebtedness, the purpose and the amount of money to be raised annually for interest and sinking fund, an election authorizing a bond issue is invalid, where the ordinance submitting the question to the voters did not inform them of the amount of money necessary to be raised annually by taxation for interest and sinking fund.—Court of Appeals of Kentucky, 169 S. W. R. 718.

**Recall of Municipal Officers—Duty of City Clerk.**

*Dunham, City Clerk, v. Ardery.*—Section 1 of article 8 of the charter of the city of Guthrie provides in part as follows: "The holder of any elective office may be removed at any time by the electors qualified to vote for a successor to such incumbent. \* \* \* The procedure to effect the removal shall be by petition, signed by electors entitled to vote for a successor to the incumbent. The signatures to the petition need not be appended to one paper, but each signer shall add to his signature his place of residence, giving the street and number. \* \* \* Within ten days from the date of filing such petition, the city clerk shall examine, and from the voters' register ascertain whether or not said petition is signed by the requisite number of qualified voters, \* \* \* and he shall attach to said petition his certificate, showing the result of such examination. If, by the clerk's certificate, the petition is shown to be insufficient, it may be amended within ten days from the date of said certificate. The clerk shall, within ten days after such amendment, make a like examination of the amended petition, and if his certificate shall show the same to be insufficient, it shall be returned to the person filing the same, without prejudice, however, to the filing of a new petition to the same effect." Held, that the duties required to be performed by the clerk are quasi judicial and vest in him the exercise of discretion and judgment.—Supreme Court of Oklahoma, 143 P. R. 331.

**Relation of Parties—Liability of Negligence of Independent Contractor.**

*Prest-o-lite Co. v. Skill.*—Where a building contract provided that the owner, through an inspector representing him, should have authority to examine the materials furnished, and to condemn that not conforming to a prescribed standard, and the inspector was authorized to arrest the progress of the work if it did not conform to such standard, but he had power only to see that the standard was lived up to as the work progressed, and had no control of the means and methods of attaining the standard, the contractor was an independent contractor, and not an employee, for whose negligence the employer was liable.—Supreme Court of Indiana, 106 N. E. R. 365.

**Injuries by Mobs—Actions—Defenses.**

*Tandy v. City of Hopkinsville.*—In an action against a city for the value of tobacco warehouses destroyed by a band of Night Riders engaged in compelling persons by force and intimidation to join a tobacco association, evidence held to make a question for the jury as to whether the city had notice or reason to believe that a raid was to be made by such band, and to support by the weight thereof its finding for the city. That a private citizen owning property in a city fails to employ guards or to resort to other lawful methods to protect it against an anticipated attempt to destroy it by a riotous or tumultuous assemblage does not defeat a recovery against the city for its destruction under Ky. St. Sect. 8.—Court of Appeals of Kentucky, 169 S. W. R. 703.

**Defective Crossing—Personal Injuries.**

*Martin v. City of Columbus.*—In the trial of an issue arising upon a charge of negligence of a city in maintaining a defective sidewalk crossing in an improved street, a description of the street, the crossing, and other objects or things affecting travel at that point, together with the particular use made of the street and crossing at the time, were matters within the comprehension of a jury, affording sufficient means of information concerning the reasonable safety of the crossing. The opinion of a witness, who has constructed or repaired such crossings elsewhere, that it was not in proper condition, or what repairs were required to make it safe, should not be admitted. Where it is contended that the collision of the left wheels of a vehicle with a defective crossing upset the wagon and caused an injury, and the jury find against the contention, the fact that the right wheels did strike the crossing is immaterial, if the crossing was not defective at that point.—Supreme Court of Kansas, 143 R. R. 421.

**Dedication—Acceptance—Streets.**

*Lastinger v. Town of Adel.*—The owner of a tract of land divided it into building lots and streets and conveyed the lots with reference to the plan. A short time thereafter a town was incorporated, embracing the territory that had been divided into streets and lots. The owner of the land, or his grantee, placed a fence upon one of these lots along the line of the street as laid out in the plan. A subsequent grantee extended the fence five feet into the street. The municipal authorities notified the present owner to draw his fence in to the line as established in the plan of the town, and that in default thereof the town would proceed to have it moved as an obstruction in the street, whereupon the landowner filed a suit to enjoin the town from interfering with his fence. On the trial the original owner of the tract, who subdivided in into lots and streets, testified that he had dedicated the land marked on the plan as a street, and marked out the line thereof, and built a fence thereon, and that afterwards the municipal authorities had worked the street in various parts. The immediate grantor of the plaintiff testified that he recognized that the plaintiff's premises in dispute encroached upon the street five feet, and so informed the plaintiff at the time he purchased the property from him. Held, where an owner of land makes an express dedication of a particular portion thereof for use as a public street, its acceptance may be shown by any act of the municipality recognizing the existence of the street as such, and treating it as one of the streets of the city.—Supreme Court of Georgia, 82 S. E. R. 884.



## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

## ROADS AND PAVEMENTS.

**Roads** in Fulton County, Ga. By W. Tom Winn, county commissioner. 1,000 words. Southern Good Roads, October. 10 cts.

The Work of the Office of Public Roads with Special Reference to the South. Includes list of post roads being constructed in the south under the supervision of the Office of Public Roads. By J. E. Pennypacker and A. P. Anderson. 6 ills., 5,000 words. Manufacturers Record, October 22. 15 cts.

Highway Work in Alabama During the Past Year. Giving types of roads laid, with costs for excavating, grading and paving. 7 ills., 1,500 words. Good Roads, October 3. 10 cts.

History of the Highways of the Roman Empire. The first of a series of articles by Nicolas Bergier. 4 ills., 3,800 words. The Highway Contractor, October. 10 cts.

Country Roads in Southeastern Wisconsin. State-aid road construction, includes innovation in the way of clay-bound macadam, high earth shoulders on concrete roads, and increased thickness of concrete of a richer mixture. 5 ills., 3,900 words. Engineering Record, October 24. 10 cts.

Good Roads—Their Relation to Civilization. General article. By Robert Stuart McArthur. 2 ills., 2,000 words. Manufacturers Record, October 22. 15 cts.

Highway Improvement in the South. A review of the work done during the past few years by the southern states, with an outline of the method of financing road construction. By Logan Waller Page, Director, U. S. Office Public Roads. 3 ills., 3,000 words. Manufacturers Record, October 22. 15 cts.

Width of Roads from the Point of View of Economy. Data concerning cost of two roads of different widths; the wider road having been found cheaper to construct. 1,000 words. Canadian Engineer, October 22. 15 cts.

Organization and Standards of the Wisconsin Highway Commission. Discusses the work accomplished and general methods of construction. Illustrations and details of standard cross sections used by the commission. 12 ills., 10,000 words. Engineering and Contracting, October 28. 10 cts.

Organization of Illinois State Highway Department. Notes on manner in which road improvements are supervised and general outline of work now on foot or contemplated. 1 ills., 1,200 words. Engineering Record, October 24. 10 cts.

How Cities and Towns Should Improve Highways. By H. E. Anschutz, highway engineer. 9 ills., 4,000 words. Manufacturers Record, October 22. 15 cts.

Materials in Improving Highways. Selection of. With typical roadway sections. Ill., 1,000 words. Manufacturers Record, October 22. 15 cts.

Construction Features of a Roadway up the Palisades of the Hudson. By E. H. Allbee. 5 ills., 1,100 words. Good Roads, October 3. 10 cts.

Heavy Grading by Convict Labor in Colorado Road Work. 5 ills., 900 words. Good Roads, October 3. 10 cts.

Economy and Efficiency in Pavement Construction. By H. B. Pullar. 3,500 words. Contract Record, October 7. 15 cts.

The Prevention of Foundation Movement in Roads. Discusses the movements of earth foundations under road surfaces subjected to weighty traffic. Gives methods of preventing movements, using concrete cross braces and covered curbs. 1,600 words. Engineering and Contracting, October 21. 10 cts.

Cost of Roads. The methods of raising money for construction and main-

tenance. By W. A. McLean, chief engineer of highways of Ontario. 4,000 words. Municipal World, October. 10 cts.

Bond Issue as a Basis for Road Improvements. By Charles F. Cushman. 2,000 words. Manufacturers Record, October 22. 15 cts.

Maintenance, Significance of Highway. A general article dealing with the value of maintenance work even on new roads. By Prof. Leonard S. Smith. 2,000 words. Engineering Contractor, October. 10 cts.

Earth Roads. Method of construction, drainage and maintenance. Ill., 1,500 words. Manufacturers Record, October 22. 15 cts.

Sand-Clay Roads. Method of Construction in various parts of the south. Ill., 1,500 words. Manufacturers Record, October 22. 15 cts.

Natural Sand Clays in North Carolina—Piedmont Belt. Description of various clays with their value as a road making material. By J. E. Smith. 1 ills., 1,800 words. Southern Good Roads, October. 10 cts.

Gravel Road Construction in Wisconsin. Describes method of construction of gravel roads as adopted by Wisconsin Highway Commission; organization of commission. 1 ills., 2,200 words. Engineering News, October 15. 15 cts.

Road Building Gravels and Gravel Roads. 4 ills., 1,500 words. Manufacturers Record, October 22. 15 cts.

Macadam in Construction. With specifications for material of construction. 4 ills., 1,500 words. Manufacturers Record, October 22. 15 cts.

Some Notes of Macadam Road Construction in Texas. The black land section of Texas conditions are discussed and methods of road construction in that section described. 2 ills., 1,800 words. Engineering and Contracting, September 30. 10 cts.

The Macadam Road. An argument for the use of macadam in the construction of suburban and country roads. By Frank D. Lyon, Secretary Interstate Stone Manufacturers' Association. 5 ills., 1,300 words. Ohio State Department Monthly, September. 10 cts.

Paving Methods in Baltimore, Md. With method of selection of paving types adopted, sections for various types and methods of laying. By H. D. Williar, asst. engr. 2 ills., 3,000 words. Engineering and Contracting, October 7. 10 cts.

Pavement and Roadway Work in Ottawa. Construction methods for various types of pavement, for curbs, catch-basins, etc. Notes on distribution of cost. By L. McLaren Hunter, city engineer. 4 ills., 1,500 words. The Canadian Engineer, October 15. 15 cts.

Conclusions and Suggestions from George W. Tillson's Report on European Pavements. 5,000 words. Good Roads, October 3. 10 cts.

Substantial Pavements. Comparison of various types of road making materials in regard to their wearing properties. 5 ills., 1,000 words. Pacific Municipalities, October. 25 cts.

Lessons for America from Street Paving Methods in European Cities. By George W. Tillson. 1,200 words. American City, October. 25 cts.

Impressions of London's Pavements. An engineer's comparison of general street work in London with that in New York City, with special attention to points often stated in London's favor. By Henry W. Durham, Bureau of Highways. 4 ills., 3,900 words. Engineering Record, October 17. 10 cts.

Materials. Relative Value of Different Paving. A discussion of the relative importance of different properties possessed by various pavements, as compared with an assumed surface pavement. 5,500 words. Canadian Engineer, October 22. 15 cts.

**Wood Block** Pavement in Newark. Paving on a mortar bed with an 18-pound treatment, wetting the blocks before laying; special features of construction. By William A. Howell. 3 ills., 2,800 words. Municipal Journal, October 29. 10 cts.

Nashville Overcomes Disadvantages of Creosoted Block. Methods of laying to prevent heaving and to provide footing for horses. By F. W. Cherrington. 3 ills., 1,200 words. The Contractor, October 15. 20 cts.

Wood Block without Sand Cushion. Ed., 450 words. Municipal Journal, October 29. 10 cts.

Causes of Excessive Bleeding of Creosote Wood Block Pavements. By H. S. Loud and S. R. Church. 1,000 words. Good Roads, October 3. 10 cts.

Bituminous Surfaces for Concrete Roads. Technical article. By W. H. Fullweiler. 900 words. Contract Record, October 21. 15 cts.

The Effect of Leaking Illuminating Gas on Bituminous Pavements. 1,500 words. Engineering and Contracting, October 28. 10 cts.

English Specifications for Bituminous Concrete Mixing Plant and Details of the Acceptance Test. 1,000 words. Engineering and Contracting, September 30. 10 cts.

Repairing Macadam Roads with Asphalt Topping in Chicago. Method involving use of portable asphalt plant. Percentage of mix, field force required and quantity of work done per day are given. 2 ills., 2,900 words. Engineering Record, October 3. 10 cts.

Voidless Asphalt Macadam Road Construction. Account of the mixing plant and methods of laying. 3 ills., 900 words. The Surveyor, October 9. 40 cts.

The Use of a Portable Asphalt Plant for Resurfacing Macadam Roads in Chicago, Ill. Give capacity of plant and cost of laying. By Walter G. Leininger, Superintendent of Streets. 7 ills., 1,500 words. Good Roads, October 3. 10 cts.

Concrete Roads, Milwaukee County, for the Present Year. Description of 25 miles of concrete road built during 1914. 3 ills., 3,200 words. The Contractor, November 1. 20 cts.

The Design and Construction of a Concrete Pavement in the Village of Glencoe, Ill. Gives plans, contract cost, cross section used and construction details of typical village street improvement. 7 ills., 4,000 words. Engineering and Contracting, October 21. 10 cts.

Granite Block Pavement as Smooth as Asphalt. Describes method of construction and quality of granite which results in a pavement of remarkable smoothness at Worcester, Mass. 3 ills., 1,500 words. Engineering News, October 23. 15 cts.

Durax Paving. Description of various methods of laying Durax in the United States and abroad. 4 ills., 1,000 words. Highway Contractor, October. 10 cts.

Asphalt, Methods for Determining the Melting Points of. Extract of paper presented at the meeting of the American Society for Testing Materials. By J. G. Miller and P. P. Sharples of the Barrett Mfg. Co. 500 words. Good Roads, October 3. 10 cts.

American Rock Asphalt. A method of preparation for application to streets. 300,000 yards laid in Texas under new methods. By T. H. Boorman. 2 ills., 500 words. American City, October. 25 cts.

Differentiation of Natural and Oil Asphalts. Scientific method of determining differences. 3,300 words. Engineering and Contracting, October 7. 10 cts.

Traffic Factors. Covering the surface formation, foundation and gradient of road, weight and intensity of weight of traffic, weather conditions and width of road. By J. Eastwood, Assoc. Mem. I. C. E. 3,500 words. The Surveyor, October 2. 40 cts.

**The Traffic Limits of Various Types of Pavement.** Statement of the amounts of traffic various road surfaces will bear successfully. Describes unusual methods of construction in Europe. 4,400 words. Engineering and Contracting, October 28. 10 cts.

**Traffic Analysis and How it May be Used.** By M. D. Greenough, Prof. of Highway Engineering, Case School. 1,000 words. Dependable Highways, October. 5 cts.

### SEWERAGE AND SANITATION.

**Sewage Disposal at Leeds.** Gives the cost of treating sewage, the amount treated and other interesting information. 1,200 words. Surveyor, October 2. 40 cts.

**Sewage Treatment at Mt. Kisco.** Description of septic tank, primary and secondary contact beds with sand filters and hypochlorite treatment. 2 ills., 1,400 words. Municipal Journal, October 15. 10 cts.

**Sewage Disposal in Third and Fourth Class Cities.** By E. J. McCaustland. 2,800 words. Pacific Builder and Engineer, October 24. 15 cts.

**Operation of Sewage Disposal Plants.** Treatment of trade wastes before discharging into sewers; chemical precipitation; grease recovered; testing or experimental station. The tenth of a series of articles by Francis E. Daniels. 1 ill., 1,750 words. Municipal Journal, October 15. 10 cts.

**Brooklyn Sewage Experiment Plant.** Screening, sedimentation in Dortmund and Imhoff tanks, a special sludge digestion tank, sludge drying bed, an aerator and sprinkling filters with and without forced aeration are being tested. By George T. Hammond, Bureau of Sewers. 3 ills., 3,600 words. Engineering News, October 22. 15 cts.

**Cleveland's Sewage Testing Station.** Description of apparatus and methods employed in obtaining data for design; grit chambers, sedimentation, septic, Imhoff and other tanks, screens, filter, sludge beds and disinfection; trade wastes; sludge disposal. By R. Winthrop Pratt and H. H. Wagenhals. 5 ills., 4,800 words. Municipal Journal, October 15. 10 cts.

**Experimental Sewage Treatment Plant at Indianapolis.** Test plant composed of Imhoff tank, 2 sprinkling filters and electrolytic tank and a laboratory. 2 ills., 500 words. Engineering News, October 15. 15 cts.

**Efficient and Inoffensive Treatment of Sewage.** By Rudolph Hering. 2 ills., 4,500 words. Contract Record, October 14. 15 cts.

**Experience in Germany with Combined Sedimentation Digestion Tanks and Separate Sludge Digestion Tanks.** Translations from the German of the Royal National Institute for Water Hygiene in Berlin. 5,500 words. Engineering and Contracting, October 7. 10 cts.

**Tank Treatment of Sewage.** Ed., 700 words. Municipal Journal, October 15. 10 cts.

**Electrolytic Sewage Treatment at Elmhurst.** Criticism of editorial comment on Travis report and reply thereto. 900 words. Engineering Record, October 17. 10 cts.

**New Electrolytic Sewage Treatment.** Description of plant being tested by Queens Borough, New York; results as determined by municipal chemist and engineer. 3,000 words. Municipal Journal, October 15. 10 cts.

**Methods of Obtaining Samples of Sewage and Sewage Liquids for Testing.** 5,000 words. Engineering and Contracting, October 7. 10 cts.

**Waste-Water Disposal at Sugar Factory.** Description of first sugar waste disposal plant using screens of the sewage type in California. 4 ills., 2,600 words. Engineering Record, October 24. 10 cts.

**Camp Sanitation.** Some Modern Methods of and Housing. Covers location and layout of camp, water supply, tents and buildings and disposal of garbage and refuse. 3 ills., 1,000 words. The Contractor, October 15. 20 cts.

**Stream Pollution.** Safe Limit of. Ed., 700 words. Municipal Journal, October 15. 10 cts.

**Sewer System in St. Louis.** Mill Creek. The third in a series of articles on St. Louis's \$3,000,000 pressure tunnel project. By W. W. Horner and Leland Chivvis. 4 ills., 5,400 words. Engineering Record, October 17. 10 cts.

**Pipe Laying.** Third and last article of studies on costs and methods for sewer trenching. By Richard T. Dana. 2

ills., 2,400 words. Engineering Record, October 17. 10 cts.

**Testing Sewer and Drain Pipe.** Methods employed by committee of American Society for Testing Materials. Formulas for modulus of rupture; standard specifications recommended. 1 ill., 3,000 words. Municipal Journal, October 15. 10 cts.

**Building Large Sewers.** Cost and Methods of. Gives the construction methods and costs for sewers built in Chicago within the past few years. By H. R. Abbott. 2 ills., 2,500 words. Contract Record, October 14. 15 cts.

**Reinforced Concrete Sewer Design and Construction in St. Louis.** With tables of sewers and arches showing cost, length and load. By W. W. Horner. 4 ills., 3,000 words. Concrete-Cement Age, October. 15 cts.

**Earth and Rock Cut Excavation Methods on Joliet Sewers.** 5 ills., 1,200 words. The Contractor, November 1. 20 cts.

**Emergency Work in Drainage-Ditch Excavation.** 2 ills., 1,100 words. Engineering News, October 8. 15 cts.

### WATER SUPPLY.

**Water Works from Fire and Insurance standpoints.** The second and last of two articles covering the design of water works. By J. B. Rider. 1,400 words. Fire and Water Engineering, September 30. 10 cts.

**Salem Water Works and the Salem Fire.** Tests made under fire conditions seem to show that large sprinkler connections broken by the collapse of buildings early in the fire were responsible for poor pressure. By F. A. McInnes and Clarence Goldsmith. 1,100 words. Engineering News, October 22. 15 cts.

**Some problems in the Design of Small Water Works Systems.** The second of a series of articles on the design and capacity of the plant and requirement for fire protection. 9,000 words. Water and Gas Review, October. 20 cts.

**Cherryvale Water Works.** Motor-driven pumps and rapid sand filters for small filters. 2 ills., 700 words. Municipal Journal, October 22. 10 cts.

**Water Supplies in Third and Fourth Class Cities.** By Morton Macartney, city engineer, Spokane, Wash. 2,200 words. Pacific Builder and Engineer, October 24. 15 cts.

**Surface Water Supplies of Illinois.** Are used by nearly half the water works of the state; runoff available; quantity of water; other troubles. 1,400 words. Municipal Journal, October 22. 10 cts.

**Water Purification at Trenton.** Description of rapid filters of thirty million gallons capacity; combined wash water and air tank; operation of machinery and low lift pump by electricity. 5 ills., 2,100 words. Municipal Journal, October 22. 10 cts.

**Purification and Protection of Water Supplies.** Covering slow sand and mechanical filtration and disinfection. By John W. S. McCullough, chief health officer of Ontario. 5,000 words. Municipal World, October. 10 cts.

**Filtration and Purification of the Ohio River Water.** Difficulties encountered in the use of the water, and methods of overcoming them. By C. B. Cook, city engineer, Wheeling. 2,500 words. Water and Gas Review, October. 20 cts.

**Analytical Tests at Water Purification Plants.** Abstracts of report of the Committee on Statistic of Water Purification Plants to the American Water Works Association. 1,300 words. The Canadian Engineer, October 22. 15 cts.

**Limitations of Water Filters.** The water may be so polluted as to make it impracticable to secure with certainty a satisfactory water. 1,400 words. Municipal Journal, October 22. 10 cts.

**Water Disinfection by Liquid Chlorine at Wakefield, Mass.** A short account of methods and apparatus employed. By Edward C. Sherman. 1 ill., 1,000 words. Engineering News, October 15. 15 cts.

**Permissible Pollution in Raw Water to be Filtered for Domestic Consumption.** By Geo. W. Fuller. 2,000 words. Contract Record, October 21. 15 cts.

**Standardization of Methods for the Bacterioscopic Examination of Water.** Report of a committee to the Royal Institute of Public Health. 4,000 words. Water and Water Engineering, October 15. 15 cts.

**Standards for Hygienic Purity of Montana Water.** By W. M. Cobleigh. 900 words. Fire and Water Engineering, September 30. 10 cts.

**Standards for Turbidity of Water.** Abstract of paper before the Illinois Water Supply Association, giving an account of tests made and methods used at the

Torresdale Laboratory, by Francis D. West, Chemist-in-charge. 1,000 words. Municipal Journal, October 15. 10 cts.

**Reservoir and Pipe Line in an Arizona Town.** Constructing. 2 ills., 800 words. The Contractor, November 1. 20 cts.

**Lining Walnut Hill Reservoir at Omaha.** Desire to eliminate leakage led to a 6-inch shell of concrete reinforced to make it stand like a dish. 2 ills., 1,800 words. Engineering Record, October 24. 10 cts.

**Large Hand-Built Earth Dam, "Mammoth Reservoir."** Construction methods for fill on either side of a concrete core wall; eventual height 125 feet; work carried to 67 foot level. By J. C. Wheelon. 1 ill., 1,300 words. Engineering News, October 15. 15 cts.

**Meter Methods in Kansas City.** Acid baths to remove corrosion, results of testing large meters and meter readings by consumers are features. 450 words. Engineering Record, October 3. 10 cts.

**Abstract of a Report on a Proposed Standard Form of Schedule for Meter Rates.** 3,500 words. Water and Gas Review, October. 20 cts.

**Consumption and Cost of Water for Uses Difficult to Control if the Supply is Unmetered.** Data on. By William F. Sullivan, Superintendent of Water Works, Nashua, N. H. 1,800 words. Water and Gas Review, October. 20 cts.

**Water Department Methods which Limit per Capita Consumption to 39 gallons Daily at Milton, Mass.** By A. D. Heffernan, superintendent of water works. 1,000 words. Water and Gas Review, October. 20 cts.

**Economics of Water Waste in Cities.** Comparative data of upon water consumption in cities of Canada, United States and Europe. Hypothetical cases analyzed to show the cost to rate payers of preventable waste. By R. O. Wynne-Roberts. 4,500 words. The Canadian Engineer, October 15. 15 cts.

**Concrete.** Use of, in Water Works Construction. Abstract of paper by Edgar E. Kay before American Water Works Association. 1,100 words. Municipal Journal, October 22. 10 cts.

**Hydrants.** Efficient Spacing of. Friction loss in hose must be provided for; hydrants closely spaced with short lines of hose to give effective fire streams. 2,500 words. Fireman's Herald, October 10. 5 cts.

**Water Main Extensions in 135 American Cities.** Provisions Governing. Gives methods of charging for water pipe extensions, population and in some cases percentage supplied. 3,200 words. Engineering and Contracting, October 21. 10 cts.

**Tight Job of Water-Main Laying at Akron, Ohio.** The author proposes a standard permissible leakage of 100 gallons per inch-mile for an entire district, with a maximum of 200 gallons for any single test. By E. G. Bradbury. 1,200 words. Engineering News, October 8. 15 cts.

**The Causes of Breaks in Large Water Mains in Chicago.** Lists 13 separate causes and discusses each. Analyses list of 47 breaks. Suggests remedies and preventive measures. 1 ill., 6,500 words. Engineering and Contracting, October 28. 10 cts.

**The Cost of Laying Cast Iron Pipe for Railway Service.** Give data on average cost. 750 words. Engineering and Contracting, October 21. 10 cts.

**Pipe-Laying Methods on the Narrows Siphon of the Catskill Aqueduct.** Describes the work of laying a 36-inch cast iron flexible-jointed submarine pipe line, about 10,000 feet long and 56 feet under water; water tight joint without the aid of divers. 6 illustrations. 1,500 words. Engineering News, October 22. 15 cts.

**Economical Diameters of Pipes.** Making the size at any point such a function of the elevation that the amount of metal shall be a minimum, when the length of pipe, its carrying capacity, hydraulic gradient and static head are known. By E. W. Rettger, C. E. Cornell University. 2,400 words. Engineering Record, October 24. 10 cts.

**How Cast Iron Water Pipe is Laid in a Busy Boston Street.** Hand methods used are discussed in detail. By Daniel J. Hauer. 2,200 words. The Contractor, November 1. 20 cts.

**A Method of Lowering Mains Under Pressure and Cost of Laying Water Mains at San Diego, Cal.** 1,500 words. Engineering and Contracting, October 28. 10 cts.

**Collapsible Core for Reinforced Concrete Pipe Construction.** Details of wooden forms employed at aerating basin near Ashokan Aqueduct. 1 ill., 600 words. Engineering Record, October 3. 10 cts.



**Concrete Pipe for Subaqueous Tunnels.** Second and last of two articles on methods and costs of turning sections on their sides and laying them under water from derrick scow. By J. C. Lathrop. 2 ills., 1,500 words. Engineering Record, October 3. 10 cts.

**Lining Pipe with Cement.** 1 ill., 400 words. Engineering News, October 8. 15 cts.

**External Corrosion of Cast Iron Pipe.** Precautionary and preventive measures. Enumerates and discusses conditions contributing to and inhibiting corrosion. Reasons for rapid deterioration are discussed and preventive measures considered. 9,000 words. Engineering and Contracting, October 21. 10 cts.

## STREET LIGHTING AND POWER.

**Plant.** Pasadena Municipal Lighting. Steam plant operated in competition with private hydro-electric plant; details of plant and of operating costs. 1,700 words. Municipal Journal, October 22. 10 cts.

**Lamp.** Recent Improvements in the Luminous Arc. Gains in efficiency through progress in electrode design and development of the prismatic refractor. Development of the 5-amp. system. 6 ills., 1,500 words. Electric World, October 3. 10 cts.

**Convention of Illuminating Engineering Society.** Abstracts of papers which were read at the sessions of the society held in Cleveland, Ohio, and of the interesting discussions that followed their presentation. 500 words. Electrical World, October 3. 10 cts.

**Power Development at Wasdell's Falls, Ont.** Newly constructed plant on the Severn river. General features of design and construction. 9 ills., 4,500 words. Canadian Engineer, October 8. 15 cts.

**Kamloop's Steam Turbine Power Plant.** Description of apparatus installed in the municipal auxiliary plant. By H. W. Beecher. 4 ills., 2,200 words. Municipal Journal, October 22. 10 cts.

**Adelaide Municipal Tramway Power Plant.** Description of the plant, equipment and methods of management of municipal plants. By F. G. Moffitt. 5 ills., 1,300 words. Power, October 20. 5 cts.

**Hydroelectric Development on Bishop Creek, Cal.** Complete utilization of all water; electricity from seven stations in tandem transmitted over 400 miles; lines designed for 140,000 volts. By C. O. Poole. 9 ills., 1,300 words. Electrical World, October 17. 15 cts.

**Cooking, Gas vs. Electricity.** Comparative costs at different rates for gas and electricity; efficiency of electrical heating and proper rates for the same. By R. C. Powell. 4,000 words. American Gas Light Journal, October 26. 10 cts.

**Gas Testing.** Standard Methods of. By C. W. Hinman. 3,000 words. American Gas Light Journal, October 19. 10 cts.

**Poles.** Concrete, and the Possible Maximum Loads on Pole Lines. 1,000 words. Contract Record, October 21. 15 cts.

## FIRE AND POLICE.

**Fire Department of New Orleans.** 4 ills., 2,000 words. Fireman's Herald, October 17. 5 cts.

**Modernizing of New Orleans's Fire Department.** With a description of the new Central Fire Station. By Louis Pujol, Chief Fire Department. 3 ills., 400 words. American City, October. 25 cts.

**Fire Prevention in Department Stores, Theatres and Other Buildings.** By Joseph O. Hammett, Chief Fire Prevention Bureau, New York. 7 ills., 1,400 words. American City, October. 25 cts.

**Fire Prevention.** Danger zone; building codes; private and public extinguishing appliances; control of occupancy hazard; state and municipal laws. 3,000 words. Contract Record, October 28. 15 cts.

**How to Plan for Fire Protection in Congested Districts.** General article. By W. A. Starrett. 1,800 words. American City, October. 25 cts.

**"Safety First" in Equitable Building.** Elaborate fire alarm system; absolute protection for tenants; testing of fire-proof material at a temperature of 1,800 degrees. 17 ills., 4,000 words. Safety Engineering, October. 25 cts.

**Police Headquarters.** Vancouver, New. Description of five-story building designed especially as police headquarters. 2 ills., 2,000 words. Contract Record, October 28. 15 cts.

## STREET CLEANING AND REFUSE DISPOSAL.

**Street Cleaning in Savannah.** Gives the number of yards of pavement cleaned during the year with approximate cost for the various kinds of pavements. 700 words. Municipal Journal, October 15. 10 cts.

**Street Cleaning, the Neglected Factor in Paving Economy.** By Gustave H. Hanna, Superintendent of Street Cleaning, Cleveland. 2 ills., 1,000 words. Dependable Highways, October. 5 cts.

**Some Notes on Street Cleaning.** From papers read at annual convention of the American Society of Municipal Improvements. 900 words. Engineering News, October 22. 15 cts.

**Some Notes on the Development of Street Cleaning Methods.** Discusses machine cleaning, the use of squeegee machines and dry cleaning. 1,800 words. Engineering and Contracting, October 21. 10 cts.

**Costs of Collecting, Hauling, Transferring and Transporting Municipal Refuse.** Illustrates the method of analyzing the cost of various parts of refuse-handling service and gives actual cost data. 1,900 words. Engineering and Contracting, October 21. 10 cts.

**Dust Preventives.** The Selection of. Abstract from a section of the report of the Ohio State Highway Department, Bulletin No. 27. 750 words. Good Roads, October 3. 10 cts.

## TRAFFIC AND TRANSPORTATION.

**Rules and Regulations Governing Street Traffic in Philadelphia.** Discusses rotary and block system, traffic semaphores and zones of safety. Abstract of rules and regulations in Philadelphia. 5 ills., 7,300 words. Engineering and Contracting, September 30. 10 cts.

**Rapid Transit Railway Extension, New York.** Second of a series of articles on New York City Subways; gives the scheme of organization, name and salaries of each rank. 3 ills., 7,200 words. Engineering News, October 8. 15 cts.

**New York Rapid Transit Extension.** Third in series describing new subway and elevated lines in New York City; takes up the general arrangement for construction, such as operating contract, equipment, grade and alignment, power plant, etc. By F. Lavis. 3 ills., 4,800 words. Engineering News, October 15. 15 cts.

**Trucks in Short Hauls.** Publishing House, Made Economical by Modern Loading Methods. The second of a series of three articles. This one treats of the uses of demountable bodies and electric hoists for loading and unloading, tending to increase running time and efficiency of trucks. 6 ills., 4,500 words. The Commercial Vehicle, October 15. 20 cts.

**Motors, their Principles and Uses.** Mechanical features of a motor installation, including methods of mounting and type of drive; charts are included for selecting proper gear ratios. By Gordon Fox. 2 ills., 3,300 words. Power, October 20. 5 cts.

## BRIDGES.

**Park Bridge of Reinforced Concrete.** Description of ornamental bridge in St. Louis park. 2 ills., 400 words. Engineering News, October 15. 15 cts.

**Design and Construction of the Larz Anderson Bridge over the Charles River, Cambridge and Boston, Mass.** 13 ills., 4,000 words. Engineering and Contracting, October 7. 10 cts.

**The Spokane River and Hangman Creek Viaduct.** Describes the single-track steel viaduct 3,003 feet long and 187 feet high above low water. Open caisson piers; interesting erection methods. By J. L. Baar, C. E. 5 ills., 2,600 words. Engineering News, October 22. 15 cts.

**General Specifications for Bridge Work of Illinois State Highway Commission.** Give general design, dead and live loads, allowable stresses, foundation and other features. 5,000 words. Engineering and Contracting, October 21. 10 cts.

**Construction and Cost Data on Some Highway Bridge Work in Alaska.** Describes conditions under which work is done and gives construction and cost data on highway bridge over the Taslina River. 2,600 words. Engineering and Contracting, October 21. 10 cts.

## MISCELLANEOUS.

**Building Code.** The Proposed State. Paper read at the State Convention of the Illinois Society of Architects. 5,000 words. Construction News, October 31. 20 cts.

**Comfort Stations.** Cincinnati. Details of arrangement of two recently completed. By K. C. Cardwell. 3 ills., 1,500 words. Municipal Journal, October 29. 10 cts.

**Inspector and the Contractor.** The Relation on engineering work between inspecting and contracting. 1,500 words. Engineering Contractor, October. 10 cts.

**Contracts.** Some Basic Principles of the Law Relating to. Covering public and private contracts, changes in specifica-

tion and in contracts after signing. 3,500 words. The Contractor, November 1. 20 cts.

**Concrete Work, Ornamental and Otherwise.** By St. Louis Park Department. 9 ills., 2,000 words. Concrete-Cement Age, October. 15 cts.

**Cement Gun Process.** Lining Large Coal Bunkers by the. 2 ills., 500 words. Engineering News, October 22. 15 cts.

**Town Forests—A European Idea by which America might Profit.** By Harris A. Reynolds. 3 ills., 1,300 words. American City, October. 25 cts.

**Ddecay in Wooden Bleachers.** A condition of stands at University of Wisconsin and the question of treatment methods and cost of preventing deterioration. By C. H. Teesdale, Forest Products Laboratory. 5 ills., 2,000 words. Engineering Record, October 3. 10 cts.

**Levees.** Experimental, with Concrete Paving and Sheet-Pile Cutoff, Mississippi River. A description of levee work at Upper Fairfield experiments to determine the effectiveness of various forms of protection; special interlocking steel piles; slope protection of concrete or grout applied with cement gun. By C. O. Sherril, Major Corps of Engineers, U. S. A. 10 ills., 1,900 words. Engineering News, October 8. 15 cts.

**Housing the Working Classes in Vancouver.** Speculation on the Problem. By R. M. Fripp. 2,500 words. Contract Record, October 14. 15 cts.

**Gasoline Storage.** Sunken Tanks Reduce Danger of. 4 ills., 1,800 words. The Commercial Vehicle, October 15. 20 cts.

**Gas Appliances.** Utilization of. By W. J. Serrill. 1 ill., 3,000 words. Gas Age, November 2. 10 cts.

**Journals.** Using Technical. Suggestions for reading and for filing and indexing articles of permanent value. 2,200 words. Municipal Journal, October 29. 10 cts.

**Convention of the American Society of Municipal Improvements.** Abstracts of Some of the Technical Papers Presented at the. 4 ills., 5,500 words. Engineering Record, October 17. 10 cts.

**Municipal Work at Hinkley, England.** Eleven Years of. Account of the work done and improvements inaugurated. By E. H. Crump, district surveyor. 2 ills., 2,500 words. The Surveyor, October 9; 2 ills., 7,000 words. Surveyor, October 16. 40 cts.

**Municipal Competition with Public Service Corporation.** Ed., 750 words. Municipal Journal, October 22. 10 cts.

**Experts.** Employment of, by Cities. Editorial article. 1,200 words. Engineering and Contracting, October 28. 10 cts.

**Commission-Manager Government.** Sandusky's. Methods of governing public utilities; initiative, referendum and recall. By Geo. L. Rinkliff. 1,500 words. Municipal Journal, October 29. 10 cts.

## BOOK REVIEW

**MUNICIPAL CHARTERS.**—By Nathan Matthews, LL.D. 203 pp. Harvard University Press, Cambridge, Mass. \$2.

This volume on "Municipal Charters" by a former mayor of Boston and chairman of that city's Finance Committee and Harvard lecturer is one of the publications of the Bureau for Research in Municipal Government. The book is the outcome of a course in Harvard and emphasizes the administrative provisions particularly in a practical manner. The different forms and types of charter are best explained and then follow discussion of "Political Features," "Relations with the State," "Relations with Public Service Corporations," "Administrative Provisions—Officers and Employees," "Appropriations, Taxes and Loans," "General Rules for the Conduct of Business," "The Assessment of Taxes," "Accounts and Reports," "The Management of Municipal Enterprises," "Full Drafts" of the two main types of charters are given. This volume is an authoritative and practical presentation of the essentials of an American city charter and will, undoubtedly, find a worthy place in the administrative library of the city.

## NEWS OF THE SOCIETIES

### Calendar of Meetings.

Nov. 9-13.

**FOURTH AMERICAN ROAD CONGRESS.**—American Highway Assoc. and American Automobile Assoc., Atlanta, Ga. Secretary, J. S. Pennybacker, Colorado Building, Washington, D. C.

Nov. 12-14.

**CONFERENCE OF AMERICAN MAYORS.**—Bellevue-Stratford Hotel, Philadelphia, Pa.

Nov. 16 and 17.

**MONTANA MUNICIPALITIES.**—Third Annual Meeting held at Billings, Mont. Robert Leavens, Mayor of Billings.

Nov. 17-21.

**NATIONAL MUNICIPAL LEAGUE.**—Annual Convention, Baltimore, Md. Secretary, Clinton Rogers Woodruff, North American Building, Philadelphia, Pa.

Nov. 18-20.

**WASHINGTON STATE GOOD ROADS ASSOCIATION.**—Spokane, Wash. Secretary, M. D. Leche, Alaska Building, Seattle, Wash.

Nov. 23-28.

**EXHIBITION OF STREET CLEANING APPLIANCES.**—Department of Street Cleaning, City of New York. J. T. Fetherston, Commissioner of Street Cleaning.

Nov. 30-Dec. 6.

**AMERICAN PUBLIC HEALTH ASSOCIATION.**—Forty-second Annual Convention, Jacksonville, Fla. Dr. C. E. Terry, Chm., Executive Committee.

Dec. 1-4.

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS.**—Municipal Day, Dec. 3, Report of Snow Removal Conference Committee—Annual Meeting, Engineering Societies Building, 29 West 39th street, New York. M. L. Cooke, Director Public Service, Philadelphia, Pa.

Dec. 2, 3, 4.

**CITY MANAGERS' CONVENTION.**—Springfield, Ohio. C. E. Ashburner, City Mgr., Springfield.

Dec. 14-18.

**AMERICAN ROAD BUILDERS' ASSOCIATION.**—11th Annual Convention; 5th Annual Good Roads Congress, and 6th Annual Exhibition of Machinery and Materials, International Amphitheatre, Chicago, Ill. Secretary, E. L. Powers, 150 Nassau st., New York, N. Y.

Feb. 10-17, 1915.

**EIGHTH CHICAGO CEMENT SHOW.**—Coliseum, Chicago, Ill. Cement Products Exhibition Co., J. P. Beck, General Manager, 208 S. La Salle Street, Chicago, Ill.

May 10-14, 1915.

**AMERICAN WATERWORKS ASSOCIATION.**—Annual Convention Cincinnati, O. Secretary, J. M. Diven, 47 State street, Troy, N. Y.

June 14-16, 1915.

**SOUTHWESTERN WATERWORKS ASSOCIATION.**—Annual Convention, Galveston, Tex. Secretary, F. L. Fulkerson, Waco, Tex.

### NATIONAL MUNICIPAL LEAGUE

Civic questions, which are being earnestly discussed by many communities, including child welfare, the food supply and the city manager plan of municipal administration, are among the features of the coming yearly meeting of the National Municipal League to be held in Baltimore November 18-21. It will be attended by hundreds of men and women experts in civic affairs. The League members will be entertained by the various civic and philanthropic organizations. Excepting the executive meetings, the sessions will be open to the public. Ex-Governor Warfield will preside over the first meeting. At this, the yearly review of important developments, along civic lines will be presented by Clinton Rogers Woodruff, secretary. "Evolution in Charter Making" will be the theme of the address of William Dudley Foulke, president of the League. This will deal particularly with the League's efforts in behalf of charter reform, in connection with

which it has had a tremendous influence in the last fifteen years.

So far as general interest goes, the sessions on Thursday, November 19, will undoubtedly be the most important. Miss Jane Addams, of Chicago, will preside in the afternoon. First on the program will be the question of food supply. Dr. Clyde L. King, of the University of Pennsylvania and chairman of the League's Committee on the Relation of the City to its Food Supply, will submit his report. Dr. King has been studying the problem ever since the protest was voiced against the increasing cost of foodstuffs, and what he has to report will have an interest for most communities. Next, the children of the cities will be considered. Mrs. Florence Kelley, Secretary of the National Consumers' League, will be the principal speaker. She will tell of conditions disclosed by her investigations and she will also describe what is being done to improve them. Women's work in the city, the importance of which is easily appreciated in view of the growth of the suffrage movement, will be discussed by Mrs. Charles A. Beard.

Thursday evening will be the "big event"—the public meeting to be addressed by President Lowell, of Harvard University; Miss Addams, and Mayor John Purroy Mitchel, of New York. President Lowell will speak of the need for greater effort in municipal administration. Miss Addams will deal with the social activities of the city, touching also upon the question of the children. Mayor Mitchel will talk on unemployment and the city's duty in this respect. President Foulke will preside.

On Friday, November 20, the question of municipal program will be taken up. After the committee's report, there will be a general discussion of this and kindred questions. Arthur M. Swanson, chief examiner for Philadelphia's Civil Service Commission, will open up the subject of "The Practicability of the Merit System." He will furnish some interesting information on its working in his city under Mayor Blankenburg. Other subjects for discussion, following reports by committees, will include the initiative, referendum, recall and preferential voting.

Henry M. Waite, the new City Manager of Dayton, Ohio, who is conducting an experiment of national interest, will describe his way of doing things and tell what has been accomplished in proof of the practicability of the plan.

Ex-Attorney General Charles J. Bonaparte, formerly president of the National Municipal League, will preside over the session devoted to political methods. Through its chairman, A. Leo Weil, an eminent Pittsburgh lawyer, the Committee on Improvement in Political Methods will submit an interesting report.

Other questions in which the League

is actively interested, having committees assigned to their study, include the liquor problem, municipal courts and civic education. In connection with the yearly meeting, there will be a conference of civic secretaries to discuss methods of promoting their work and arousing deeper interest in the work.

In the business session of the League officers will be elected. The present officers are: President, William Dudley Foulke, of Richmond, Ind.; vice-presidents, Miss Addams, John Stewart Bryan, of Richmond, Va., Camillus G. Kidder, of Orange, N. J., President Lowell, of Harvard; Geo. McAneny, of New York, J. Horace McFarland, of Harrisburg, Charles Richardson, of Philadelphia, Chester H. Rowell, of Fresno, and Dudley Tibbits, of Troy; secretary, Clinton Rogers Woodruff, of Philadelphia; treasurer, George Burnham, Jr., of Philadelphia; chairman of executive committee, Dr. M. N. Baker, of Montclair, N. J.

### NORTHWESTERN GOOD ROADS CONGRESS.

The first annual convention of the Northwestern Good Roads Congress, held at Milwaukee Oct. 28-31, was well attended by prominent road engineers from all over the United States. Governors E. P. Dunne, of Illinois, W. N. Ferris, Michigan, G. W. Clarke, Iowa, E. P. Eberhard, Minnesota, L. B. Hanna, North Dakota, and Frank N. Byrne, of South Dakota, as well as Secretary Bryan, were present.

Among the papers read were: "Bituminous Roads and Pavements," F. G. Simmons, commissioner of public works, Milwaukee; "The Highway, Bridge and Culvert," A. Marston, chairman Iowa highway commission, Ames, Iowa; "Relation of Good Roads to Rural Educational Opportunities," George McKerrrow, Pewaukee, Wis.; "Good Roads and the Child Welfare Movement," Mrs. Frank de Carmo, chairman rural child welfare committee, National Mothers' Congress, St. Louis, Mo.; "Gravel Roads," by C. R. Agg, and "The Relation of Good Roads to Rural Educational Opportunities," by George McKeiron.

One of the talks which attracted the most attention during the convention was delivered by H. J. Kuelling, county highway engineer of Milwaukee, on concrete roads, Friday afternoon after the delegates had visited nearly 100 miles of roads in Milwaukee county. Mr. Kuelling explained the state and county system of building roads. "In 1911, thirty-nine motor-driven trucks passed a point on the Janesville plank road on two days," said Mr. Kuelling. "Last summer, 1,107 passed the same point in one day, which shows the use which is being given these roads."

Recommendations made by the Congress were: That the county should be the smallest unit of government to initiate good road work under state aid or state reward policies, and that the county boards or commissions should be clothed with the necessary authority under the direction of the state



highway commission to construct and maintain all main highways.

That legislation be enacted in the states making it optional with each county to vote a bond issue for permanent highway construction.

That appropriations for main road development, the same to be allotted to the states and expended under the joint direction and supervision of the Federal Government and the state where the road is built.

Indorsement of the Lincoln highway and interstate system of roads was made.

The committee on legislation recommended that the congress go on record as being in favor of government aid for the purpose of encouraging permanent construction on the main traveled roads in the various states.

It further suggested that congress amend the postal laws so as to admit state highway bulletins as frank matter, as they are written in the interest of the public.

It recommends to the general assemblies of the several states that enforcement be made and regulations enacted governing the speed of automobiles, width of tires and general regulation of all traffic with due regard to the safety of the public and protection of the highways.

President, George W. Cooley, state highway engineer of Minnesota; first vice-president, John A. Hazelwood, state highway commissioner of Wisconsin; second vice-president, P. C. McCordle, state highway engineer of Illinois; third vice-president, O. Albertus, Mayor of Doland, S. D.; secretary, James P. Keenan, of Milwaukee. Milwaukee was selected as the permanent headquarters of the Congress. The meeting place for next year was not chosen as the executive committee will select the city later. Cedar Rapids, Ia., Detroit, Minneapolis, Fargo and Clinton, Ia., are candidates.

#### **Municipal Engineers of the City of New York.**

"The Fire Alarm System of New York," by Putnam A. Bates, Chief of the Bureau of Fire Alarm of New York City, was presented at the meeting of the society Oct. 28. The paper was illustrated by lantern slides.

#### **Massachusetts Association of Boards of Health.**

The Massachusetts Association of Boards of Health held a meeting at Hotel Brunswick, Boston, October 29, with an attendance of about a hundred health department men. President James C. Coffey, of Worcester, presided. Students from the Institute of Technology and the co-operative health school maintained by Harvard and Tech attended the discussion. Several problems were considered, one of them being the sanitary situation in Fall River, on which Frederick H. Fay delivered an illustrated address. Mr. Fay is one of the experts retained by the Quechean commission to survey the district and suggest means of improvement.

(Continued on page 718.)

## **PERSONALS**

Allen, Dr. William H., one of the founders of the Bureau of Municipal Research and a director from the beginning, has resigned his directorate.

Bowe, Thomas F., of East Rutherford, the senior partner of the engineering firm of Bowe & Wessels, official surveyors of East Rutherford, Union township and other boroughs, has received the appointment of consulting engineer by the joint appropriation committee of the New Jersey Senate and Assembly to help the investigation of road building and inland waterways.

Buckles, Owsley, of Rineyville, Ky., has been appointed road engineer of Hardin County for two years.

Burton, W. A., junior member, A. S. C. E., and Chief Engineer of the Paris and Mt. Pleasant Railway, and H. C. McCluer, C. E., have formed a partnership and will do a general engineering business with offices at Mt. Pleasant, Tex.

Kieran, Patrick, has resigned as superintendent of the Fall River, Mass., waterworks, which position he held for thirty years.

Loeffler, A. A., has resigned the position of city treasurer of Saginaw, Mich., and has accepted a position with the Jackson-Church Co.

Maher, James A., has been appointed superintendent of the water works of Newport, Kentucky.

McLoughlin, Dr. Allen J., has been appointed Health Commissioner of Massachusetts by Gov. Walsh and his appointment has been confirmed by the council.

Niles, Charles A., for ten years chief and for nineteen years a member of the Burlington, Vt., fire department, resigned Nov. 1. He recommended as his successor assistant chief Carl D. Stockwell. Mr. Niles will act as agent for the Cole Automobile Co.

Noble, Frederick C., Division Engineer of the Public Service Commission in charge of subway work in Brooklyn, resigned. Mr. Noble has been connected with the Public Service Commission ever since it was organized. He was a city engineer before that time, having first been appointed to the Board of Rapid Transit Commissioners on June 1, 1900. He was in full charge of the local or Sixth District. His position carries with it a salary of \$6,000 a year. The place is being temporarily filled by Deputy Engineer Abraham Lodholl.

Reilly, B. J., former second assistant chief of the Ithaca fire department, has been appointed chief of the department to succeed J. A. Fisher, who died some time ago.

Smoke Inspector Heath, of Cincinnati, has been appointed to membership on the Standardization Committee of the International Association for the Prevention of Smoke.

Snagg, Samuel C., for 32 years chief of the Waterbury Fire Department, has tendered his resignation to the mayor and board of public safety, to take effect November 1. Deputy Chief

Henry H. Heitman will be his successor.

Tynan, Major F. J., for 30 years chief of police at Portsmouth, Va., has handed in his resignation to take effect Dec. 1. His successor has not yet been chosen.

The following new officials have been elected:

Cleveland, Tenn.—C. A. Mee, mayor; Jake Kirby, city water commissioner; Elmo Bartlett, city recorder. Aldermen: First ward, Dr. W. H. Schulz and John L. Smith; Second ward, Bob Henderson and Gid Williams. William Smith and J. Gibson were re-elected aldermen in the Third ward.

Marion, Ala.—H. Y. Whitman was elected mayor and E. M. Blackburn, J. H. Hogue, W. H. Mason, J. M. Moore and J. C. Mickleboro as councilmen.

Jacksonville, Ala.—Mayor, E. O. McCormick; councilmen, W. H. Franklin, D. W. Goodlet, R. P. Johnson, H. H. Montgomery and George H. Rowan.

Selma, Ala.—J. L. Clay, mayor; Louis Benish, president of the city council; councilmen from the First ward, George Treadwell and Kent Coe; councilmen from the Second ward, P. B. Harrell and T. J. Rowell; councilmen from the Third ward, M. M. Lehman and Henry Franelich; councilmen from the Fourth ward, L. D. Porter and F. C. Krebs; councilmen from the Fifth ward, S. S. Smith and J. S. Butler.

Hudson, N. Y.—William Wortman, mayor; H. E. Fritts, city judge; W. J. Phillips, assessor; Gillette, Hardin, Avery, Connelly and Golderman, aldermen.

Courtland, N. Y.—Leland G. Davis, mayor; E. G. Thompson, city judge; Ralph Ames, chamberlain; F. E. McFall, assessor.

Ogdensburg, N. Y.—Julius Frank, mayor; D. H. Corcoran, recorder.

Flemington, N. J.—Benjamin F. Dewey, mayor; Charles Henzler and William J. Britton, councilmen.

Morristown, N. J.—Clifford Mills, mayor; Henry Hoffman, Thos. Wiss, S. F. Beach and W. L. Looney, aldermen.

Providence, R. I.—Joseph H. Gaines, mayor.

Pawtucket, R. I.—Giles W. Esterbrook, mayor.

Cranston, R. I.—John W. Horten, mayor.

Woonsocket, R. I.—David J. Snyder, mayor.

Central Falls, R. I.—Leonidas Pouliot, mayor.

Millville, N. J.—Miss Helen Myers has been appointed city clerk.

Norwich, N. Y.—Fred McMullen, mayor.

Dunkirk, N. Y.—Thos. D. Woods and Martin Mullen, councilmen; James M. Madigan, city treasurer; Paul Weiss, assessor; Harry James, police commissioner; Mr. Koch, water commissioner.

(Continued on page 718.)

## NEW APPLIANCES

### "NEW DEPARTURE" FIRE BELLS.

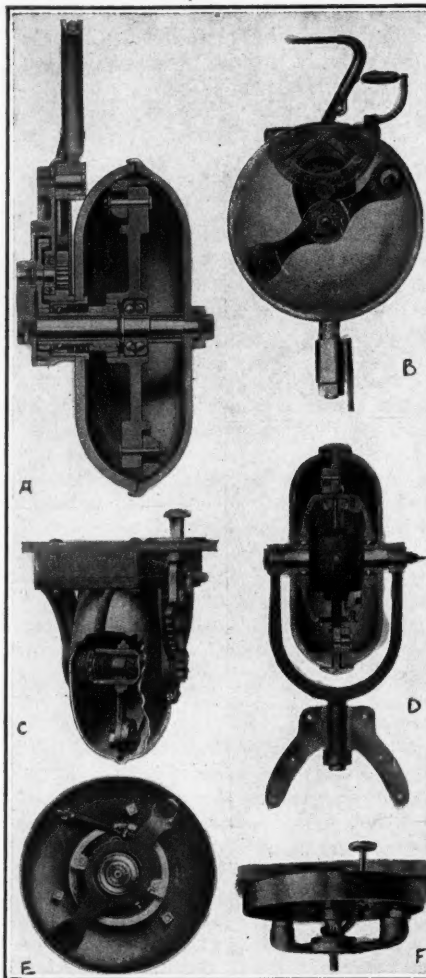
#### For Motor and Horse-Drawn Apparatus.

"New Departure" fire bells have a simple, strong and reliable mechanism which gives a distinctive "fire" note and are adapted to all types of apparatus. The bells for motor-driven apparatus can be obtained for mounting on the side of the seat or on the dash and operated in either position by lever or rope pull from any part of the car, seat, running board or rear. The bell can be instantly removed from a disabled piece of apparatus without the use of tools. All the rotating parts are mounted on "New Departure" ball bearings and the mechanism is entirely encased and protected from the elements. The gongs are of special composition bell metal.

In operation, an easy sweep of the lever or pull of the cord causes the double arm to rotate, delivering strong blows on anvils or cams cast integral with the gong. The striking hammers are tool steel mounted on either end of the double revolving arm and are thrown outward by centrifugal force. The revolving member is actuated by a gear train so designed that the hammers strike the anvils sixteen times for every complete movement of the operating lever or cord. The gearing is encased in an oil-tight casing. The clutch is one-direction and is composed of a hardened, internally slotted cone and cup pressed into the hammer arm casing. When the operating lever is moved forward, the clutch is forced into contact with the cup under pressure so that positive drive is secured. When the handle is returned to the starting point, the grip of the clutch is released but the hammers continue to revolve for several seconds.

The "New Departure" electric chime gives a greater volume of sound than the single gong bell, and it may be rung continuously by the driver without interfering with the running of the car—merely by keeping one finger on a button on the steering wheel. The bell may also be operated from any other part of the car. The chime is produced by two gongs varying in tone, which are struck by the hammers alternately. The gongs are stationary and cannot work loose. The hammers rotate by their own momentum for a considerable period after the electric current is withdrawn. In the bell is a fixed motor

carrier with a motor operating from direct current furnished by six or eight volt batteries, or by electric lighting or starting equipment already on the car. The motor is mounted on ball bearings and the armature



TYPES OF FIRE BELLS.

windings are laminated and carefully protected. It is locked firmly into the bell. The hammers give two hundred blows a minute, producing a clear, effective tone. Push fire bells are also made on the same principle. The chief's buggy bell is made for foot plunger operation. All the types are illustrated here. A and B are two views of the hand-operated gong, C shows the chief's buggy bell, D, illustrates the electric chime and E and F show the push bell. These bells are made by the New Departure Mfg. Co., Bristol, Conn.

### "OXWELD" CUTTING BLOWPIPE

#### For Rapid Cutting of Steel by Firemen.

The Oxweld cutting blowpipe is claimed to be the fastest known device for cutting of steel and consists of a blowpipe burning a mixture of oxygen and acetylene gases to produce a flame with a temperature of about 6,300 degrees Fahrenheit. The Oxweld special cutting outfit is designed for fire department use in going through steel obstructions like fire doors, window grating or other steel work. The outfit consists of the Oxweld cutting blowpipe, two lengths of 50 feet of copper armored hose, the necessary acetylene and oxygen regulators, one steel oxygen cylinder of 50 cubic feet capacity, one acetylene cylinder of 40 cubic feet capacity and a substantial leather carrying harness for each cylinder. The entire outfit weighs only 118 pounds and is thus easily portable and may be carried by one man to any place necessary. When not in use the outfit may be fastened to the running board or other convenient part of the truck. The two gases used are easily obtainable and are inexplosive. The operation of the blowpipe is simple and may be learned very quickly.

In a recent test, as shown in the il-



CUTTING STEEL WITH OXWELD BLOWPIPE.



illustrations, a fireman made a 12-inch cut around a lock through  $\frac{1}{4}$ -inch metal in 36 seconds and also cut twenty  $\frac{1}{2}$ -inch square bars of a steel window grating in 50 seconds. It is calculated that with this outfit 45 lineal feet of  $\frac{1}{4}$ -inch steel, 30 lineal feet of  $\frac{1}{2}$ -inch or 10 lineal feet of 1-inch may be cut on one charge of oxygen. The speed per minute of the cutting is claimed to be 20 lineal inches of  $\frac{1}{4}$ -inch steel, 15 lineal inches of  $\frac{1}{2}$ -inch,  $10\frac{1}{2}$  lineal inches of 1-inch, 6 of 2-inch, 3 of 4-inch.

The apparatus is made by the Oxyweld Acetylene Co., Newark, N. J., Chicago and Los Angeles.

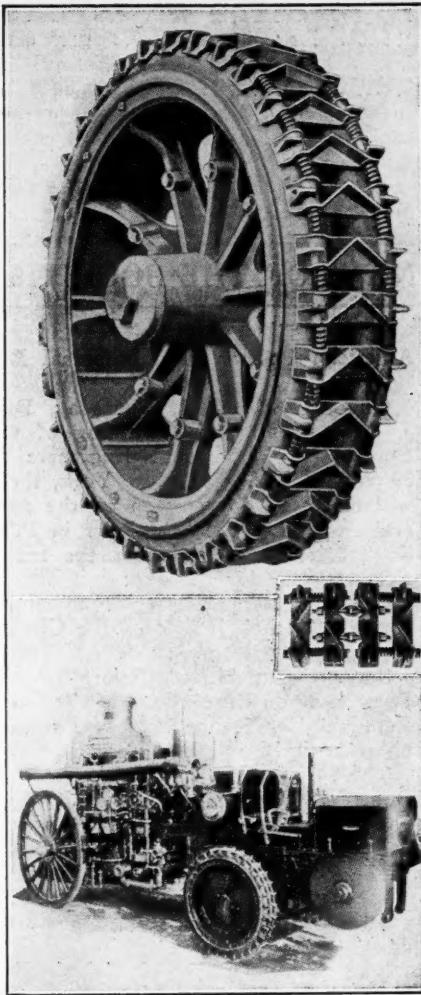
#### NON-SKID TIRE PROTECTOR.

The "Gripper" non-skid tire protector is designed for use on the rear tires of motor trucks and the front wheels of front wheel driven fire apparatus, to prevent skidding on wet or slushy roads, to provide for better grip and traction on grades and to protect the tire. The protectors thus enable the truck to operate in any sort of weather. The device consists of specially shaped grip castings spaced out by springs and the whole locked into a continuous rim by bolts as shown. The grip castings are made of manganese steel to insure durability and the whole device is built for hard service. The "Gripper" protector, which is shown in the accompanying illustration, is made by the Huffman Mfg. Co., Youngstown, O.

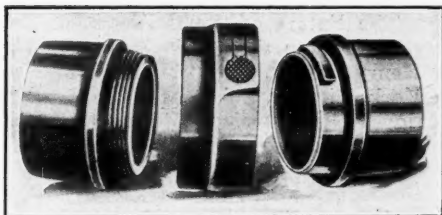
#### A COMBINATION STREAM AND SPRAY NOZZLE.

The Anderson nozzle is a combination shut-off, straight stream and spray nozzle with novel and useful features. It will throw either a straight stream or spray alone or both at the same time. The spray may be thrown at any angle, affording the nozzleman protection from heat, smoke and hot cinders. The nozzle is easily handled by one man. It is of simple and durable construction. This nozzle, which is illustrated here, is made by the G. A. Anderson Mfg. Co., Bush and Russell streets, Baltimore, Md.

The same manufacturers make, among other fire-fighting appliances, the "An-



"GRIPPER" TIRE PROTECTOR.  
(Showing Method of Locking.)



"ANDERSON" COUPLING.

derson" coupling—a quick-action, free swivel coupling. This coupling has no lugs and does not require wrench, key or spanner; it is claimed not to leak under any pressure or freeze in cold weather. It is interchangeable with any other coupling, no change of threads being required. Connection is made by merely inserting one part into the other and giving it a quarter turn—connection is broken by pressing a thumb-spring and giving one part a quarter turn. The "Anderson" hydrant cap is made for use in connection with the "Anderson" coupling, but can be used in connection with any coupling. The illustration shows the three parts of the "Anderson" coupling.

### INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago—200 tons have been placed at Ashton, Ill. A Duluth contract pending is to be increased to 300 tons and a similar amount will be bid on at Springfield, O. Quotations: 4-inch, \$26; 6 to 12-inch, \$24; 16-inch and up, \$23.50. Birmingham—Far Western cities are giving a number of orders. Quotations: 4-inch, \$20; 6-inch and up, \$18. New York—Troy, N. Y., has opened bids on about 1,400 tons of 30-inch pipe. Quotations: 6-inch, \$20 to \$20.50.

**Lead.**—Quotations: New York, \$3.50; St. Louis, \$3.375.

#### Tests of American-La France Engines.

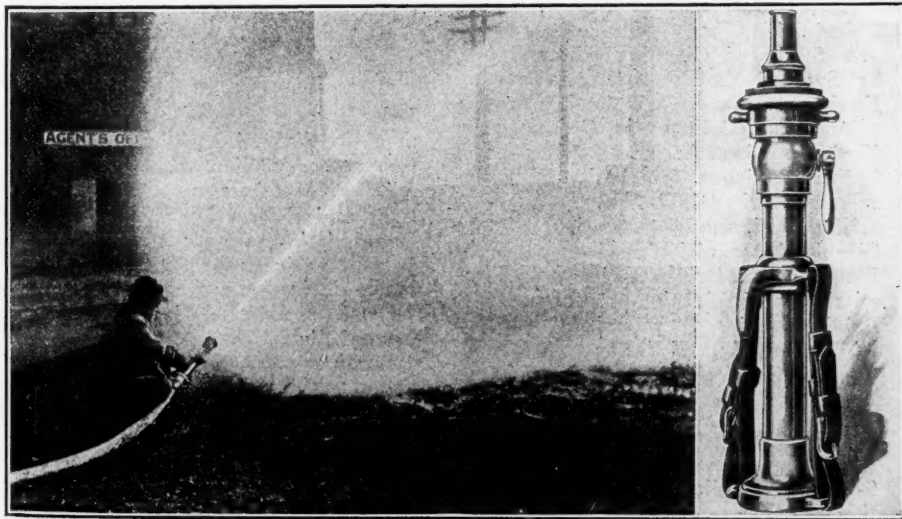
Official tests were recently held on the delivery at Seattle, Wash., of two Type 12 American-La France pumping engines 592 and 593, under the direction of F. L. Stetson, Chief of Fire Department, and members of the Board of Public Works. Engine pump pressure gauge reading by Fire Marshal H. W. Bringham; nozzle pressure gauge reading by Battalion Chief W. J. Hodder and A. P. Jensen. Engine drafting water 10 ft. 8½ inches. Six cylinder, 5½x6, A.L.A.M. rating, 72.6 h. p. Rated capacity: 800 gals. per minute at 120 lbs. pump pressure; 400 gals. per minute at 200 lbs. pump pressure; 350 gals. per minute at 250 lbs. pump pressure. Weight: fully equipped, with gasoline tanks and radiator filled, but without fire hose, 8,620 lbs.

#### Test on Engine and Hose Car 592.

Test No. 1.—Starting with no water in suction or pump. Water forced through 100 ft. of 2½-in. fire hose with 1¼-in. nozzle, in 5 seconds. Pressure increased to 100 lbs. in 13¾ seconds.

Test No. 2, Eastman Deluge Set.—Two lines of 2½-in. hose, 100 ft. each, siamesed into one with 1¼-in. nozzle. Average pump pressure, 63 readings, 203½ lbs. Average nozzle pressure, 50 readings, 143.04 lbs. Average discharge, 552 gals. per minute.

Test No. 3, Eastman Deluge Set.—Two lines of 2½-in. hose, 100 ft. each, siamesed into one with 1¼-in. nozzle. Average pump pressure, 76 readings, 121 5/7 lbs. Average nozzle pressure, 61 readings, 83.26 lbs. Average discharge, 832 gals. per minute.



COMBINATION NOZZLE THROWING SPRAY AND STREAM.

Test No. 4.—One line, 350 ft. of 2½-in. hose with 1¼-in. nozzle. Average pump pressure, 60 readings, 251 1/3 lbs. Average nozzle pressure, 60 readings, 102.1 lbs. Average discharge, 467 gals. per minute.

Test No. 7.—350 ft. 2½-in. hose with 1¼-in. nozzle. Efficiency of relief valve tested by opening and shutting shut-off nozzle. Variation of 20 lbs. (110 lbs. to 130 lbs.).

#### Increase Over Specification Requirements.

Specifications, Test No. 2, 400 gals. at 20 lbs. pressure; test, 552 gals. at 203½ lbs.; increase, 38 per cent. Specifications, Test No. 3, 800 gals. at 120 lbs. pressure; test, 832 gals. at 121 5/7 lbs.; increase, 4 per cent. Specifications, Test No. 4, 350 gals. at 250 lbs. pressure; test, 467 gals. at 251 1/3 lbs.; increase, 33.4 per cent.

Specified capacity to be not less than 8 gals. per minute per h. p.; h. p. 72.6 A.L.A.M. rating; capacity, 832 gals., or 11.4 gals. per h. p. per minute.

#### Test on Engine and Hose Car 593.

Test No. 1.—Starting with no water in suction or pump. Water forced through 100 ft. of 2½-in. fire hose with 1¼-in. nozzle, in 5 seconds. Pressure increased to 100 lbs. in 10 seconds.

Test No. 2.—Eastman deluge set, two lines of 2½-in. hose, 100 ft. each, siamesed into one with 1¼-in. nozzle. Average pump pressure, 60 readings, 208.56 lbs. Average nozzle pressure, 60 readings, 178.6 lbs. Average discharge, 592 gals. per minute.

Test No. 3.—Eastman deluge set, two lines of 2½-in. hose, 100 ft. each, siamesed into one with 1¼-in. nozzle. Average pump pressure, 60 readings, 129 2/3 lbs. Average nozzle pressure, 60 readings, 89.23 lbs. Average discharge, 858 gals. per minute.

Test No. 4.—One line, 350 ft. of 2½-in. hose with 1¼-in. nozzle. Average pump pressure, 61 readings, 262½ lbs. Average nozzle pressure, 61 readings, 104.6 lbs. Average discharge, 471 gals. per minute.

Test No. 5.—Single line, 500 ft. of 2½-in. hose with 1¼-in. nozzle. Three minute test. Pump pressure, 264 lbs. Nozzle pressure, 85 lbs. Discharge, 425 gals. per minute.

Test No. 6.—Single line, 950 ft. 2½-in. hose to base of 5-in. standpipe (with four 90° angle) followed by 50 ft. 2½-in. hose attached to top of standpipe and 1¼-in. nozzle at an elevation of 80 ft. above discharge on engine. Four minute test. Pump pressure 280 lbs. Nozzle pressure 65 lbs. Discharged 300 gals. per minute.

Test No. 7.—350 ft. 2½-in. hose with 1¼-in. nozzle. Efficiency of relief valves tested by opening and closing shut-off nozzle without affecting engine or pump.

#### Increase Over Specification Requirements.

Specifications, Test No. 2, 400 gals. at 200 lbs. pressure; test, 592 gals. at 208 56/100 lbs.; increase, 48 per cent. Specifications, Test No. 3, 800 gals. at

120 lbs. pressure; test, 858 gals. at 129 2/3 lbs.; increase, 7.2 per cent. Specifications, Test No. 4, 350 gals. at 250 lbs. pressure; test, 471 gals. at 262½ lbs.; increase, 34.5 per cent. Specified capacity to be not less than 8 gals. per minute per h. p.; h. p. 72.6 A.L.A.M. rating; capacity, 858 gals., or 11.8 gals. per h. p. per minute.

## NEWS OF THE SOCIETIES

(Continued from page 715.)

### American Society of Mechanical Engineers.

On Municipal Day, Thursday, Dec. 3, during the annual meeting of the Society of Mechanical Engineers at 29 West 39th street, New York, there will be an all-day session on the general subject of the "Engineer in Public Service." Following is the tentative program for the day:

Opening Remarks, by Hon. John Purroy Mitchel, Mayor of the City of New York.

Snow Removal, a Report of the Committee on Resolutions of the Snow Removal Conference held in Philadelphia, April 16 and 17, 1914.

The Collection and Disposal of Refuse, From An Engineering Standpoint, by Irwin S. Osborne, designer and operator of the Columbus (Ohio) Garbage Disposal Plant, and consulting engineer of the cities of Philadelphia, New York, Washington, D. C., and Toronto, Canada.

The Training of Municipal Employees, by H. M. Waite, City Manager, Dayton, Ohio.

The Cleaning of Public Buildings, by Wm. H. Ball, Chief, Bureau of City Property, Philadelphia, Pa.

The Future of the Police Arm, Presented From the Engineering Side, by Henry Bruère, City Chamberlain, New York City, and Director of the National Bureau of Municipal Research.

The Highway Department, A Problem in Organization, by William H. Connell, Chief, Bureau of Highways and Street Cleaning, Philadelphia, Pa.

Controlling Factors in Municipal Engineering, by Morris L. Cooke, Director, Department of Public Works, Philadelphia, Pa.

A Study of Cleaning Filter Sands, by Sanford E. Thompson, Consulting Engineer, Newton Highlands, Mass.

Municipal Colleges in Germany, by Clyde L. King, Assistant Professor in Political Science, University of Pennsylvania, Philadelphia, Pa.

The Design and Operation of the Cleveland Municipal Electric Light Plant, by Frederick W. Ballard, Commissioner of Lighting, Department of Public Utilities, Cleveland, Ohio.

The Handling of Sewage Sludge, by George S. Webster, Chief Engineer, Bureau of Surveys, Philadelphia, Pa.

### League of Virginia Municipalities.

The annual meeting will be held Nov. 9-10 at Norfolk, Va. It is expected that the league will indorse the recall of city officials. W. H. Sargeant, Jr.,

of Norfolk, president of the league, will present a resolution to that effect. **Pennsylvania Waterworks Association.**

The 19th annual convention of the Philadelphia Waterworks Association was held at Atlantic City, Oct. 21-23. Over 200 delegates were present. These officers were elected: President, J. M. Wilson, of Easton; vice-president, N. M. Freck, of Millersburg, and A. W. Horn, of Mount Carmel; secretary, J. Purviance, of Pittsburgh.

## PERSONALS

(Continued from page 715.)

Stillwater, Minn.—N. A. Starke, mayor; Elmer Lots, city treasurer; Emil Reinhardt, A. Lohman and Charles Fisher, aldermen.

Alpine, N. J.—Godfrey J. Mahler, mayor.

Carlstadt, N. J.—Philip Obenhuber, mayor.

Closter, N. J.—Warren Ferdon, mayor.

Moonachie, N. J.—Julius Pries, mayor.

Palisade Park, N. J.—Benjamin E. Budds, mayor.

Ramsay, N. J.—F. William Gertzen, mayor.

Detroit, Mich.—Oscar B. Marx, mayor; Richard Lindsay, city clerk; M. C. Koch, city treasurer.

The following officials were elected in New York:

Rensselaer, N. Y.—John McIntyre, mayor.

Deposit, N. Y.—Superintendent of highways, Fred Deeming.

Rome, N. Y.—Barnard, president common council; McMasters, city clerk; Connell, city treasurer.

The following were elected in New Jersey:

Bradley Beach, N. J.—Jacob H. Doll, mayor; Thomas P. Barkalow and William O. Harens, councilmen.

Elizabeth, N. J.—Victor Mravlag, mayor; William F. Marsh, freeholder.

Newark, N. J.—Thomas L. Raymond, mayor; Tries and Denman, board of public works; Eichhorn, city home trustee.

East Orange, N. J.—Worrall F. Mountain, mayor.

Ogdensburg, N. J.—Mayor, Patrick J. Dolan; councilmen, three years, Elmer Brooks and Marshall H. Snover; two years, William E. Chambers and John P. Madden; one year, Raymond Case and Robert M. Evans; assessor, Leonard A. Sweeney; collector, David L. Dolan; justices of the peace, Benjamin C. Gordon and William S. Percy; constables, Edward G. Hoppaugh and Ernest Shaw.

South Amboy, N. J.—William S. Dey, mayor; Richard M. Mack, city clerk; Collin J. Stratton, alderman-at-large.

Bloomfield, N. J.—Frederick Saden, mayor.

Caldwell, N. J.—Frederick R. Cook, mayor; L. E. Jacob, member borough council.



# ADVANCE CONTRACT NEWS

## ADVANCED INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREETS AND ROADS.</b>				
Minn.	Morris	10 a.m., Nov. 14	State road work	F. E. Ware, Aud.
Mass.	Boston	Noon, Nov. 15	Granite block paving	L. R. Rourke, Comr. P. W.
Minn.	St. Paul	10 a.m., Nov. 16	Grading and improving streets	A. Hohenstein, Pur. Agt.
N. D.	Mohall	2 p.m., Nov. 16	Grading	Peter Carlson, Aud.
O.	Wauseon	1 p.m., Nov. 16	Two miles of gravel road	W. W. Ackerman, Co. Aud.
Fla.	Clearwater	Nov. 16	Paving with vitrified brick	County Comrs.
Fla.	Lake City	Nov. 16	2,600 yds. vitrified brick paving	J. W. Lane, Secy.
O.	Toledo	10 a.m., Nov. 17	Concrete driveway	Chas. A. Sanzenbacher, Aud.
S. D.	Bellevue	Nov. 17	5,234 yds. road grading and construction	F. E. Bennett, Co. Aud.
Ala.	Cullman	Nov. 17	Grading, draining and surfacing with chert and slag, 1½ miles	City Clerk.
Pa.	New Castle	10 a.m., Nov. 17	Brick block paving	State Highway Dept.
Ind.	Chicago Heights	8 p.m., Nov. 17	Concrete paving and street improvements	M. H. McCoy, City Engr.
W. Va.	Moundsville	Noon, Nov. 18	Vitrified brick paving	J. E. Chase, Clk.
Tex.	McKinney	noon, Nov. 18	7.6 miles of highway, also bridges and culverts	P. Creager, Engr., Celina, Kan.
Pa.	Connellsville	noon, Nov. 19	Sidewalk over bridge	H. Kissinger, Co. Controller.
Ind.	New Albany	10 a.m., Nov. 19	Grading and improving road	J. T. Miller, Aud.
Mich.	Quincy	1:30 p.m., Nov. 20	1½ miles crushed stone road	Branch County Rd. Comrs.
Ind.	Richmond	11 a.m., Nov. 21	Grading, draining and surfacing road	Comrs. Wayne Co.
Ind.	Indianapolis	10 a.m., Nov. 23	Gravel road construction	W. T. Patten, Aud.
Fla.	Jacksonville	8 p.m., Nov. 23	1,900 sq. yds. Dolorway pavement	Committee of Public Works.
Md.	Baltimore	Noon, Nov. 24	Four sections of state highway	State Roads Commission.
Pa.	Harrisburg	10 a.m., Nov. 24	Four miles brick paving	State Highway Dept.
Pa.	Butler	Nov. 24	Road work	State Highway Dept.
Pa.	Harrisburg	10 a.m., Nov. 24	20,158 lin. ft. of brick road	State Highway Com.
Ala.	Centerville	Nov. 25	Surfacing with chert, estimated cost \$10,500	Co. Comrs.
O.	Columbus	noon, Nov. 30	Improving 3,400 ft. of road	John Scott, Clk. of Co. Comrs.
Mich.	St. Joseph	Dec. 1	Construction of 32 miles of road	Berrien Co. Comrs.
N. C.	Asheville	Dec. 6	Seven miles bituminous macadam road	C. H. Neal, Road Engr.
Cal.	Porterville	Dec. 7	50,000 sq. yds. asphalt concrete	I. H. Althouse, City Engr.
<b>SEWERAGE.</b>				
Wis.	Oconomowoc	Noon, Nov. 14	Sanitary sewers	Board Public Works.
La.	New Orleans	Noon, Nov. 14	Sewer and water connections	Sewerage and Water Board.
Ill.	Chicago	Noon, Nov. 14	Sewer and water extensions	Sewerage & Water Board
La.	New Orleans	Noon, Nov. 14	Sewer extensions, water extensions, connections to sewers and water mains, etc.	F. S. Shields, Sec. Sew. & Water Board.
O.	Conneaut	Noon, Nov. 14	Sewerage system and sewage treatment plant	City Engineer.
Ore.	Corvallis	8 p.m., Nov. 14	24-inch relief sewer	G. W. Denman, Munic. Judge.
Mass.	Boston	Noon, Nov. 15	Sewers and drains	City Auditor.
O.	Steubenville	Nov. 15	Rebuilding incinerating furnaces at city garbage plant	H. H. Henderson, D. P. S.
Ia.	Iowa Falls	Nov. 15	Sewer and water extensions, \$20,000	J. H. Farrington, City Engr.
N. J.	Camden	8 p.m., Nov. 16	Sewers in several streets	Joshua C. Haines, Chr. Committee on Sts. & Highways.
Ind.	Kokomo	10 a.m., Nov. 16	Vitrified tile sewer	Board Public Works.
Neb.	Mitchell	6 p.m., Nov. 17	Lateral sewer	Village Clerk.
N. J.	Manasquan	Nov. 17	Water and sewer system	R. D. Bush, Boro. Clk.
N. J.	Paterson	4 p.m., Nov. 17	Sewer connections	Board Public Works.
Kan.	Muscotah	10 a.m., Nov. 17	Drainage work	Board Supervisors.
Ill.	Chicago	11 a.m., Nov. 17	Boiler for pumping station	L. E. McGann, Comr. P. S.
N. Y.	New York	11 a.m., Nov. 18	Sewer repairing	President Borough Brooklyn.
Mass.	Boston	Noon, Nov. 18	Sewerage construction	L. R. Rourke, Comr. P. W.
N. Y.	Wappingers Falls	8 p.m., Nov. 18	Sewerage system	Village Board.
Ill.	Chicago	11 a.m., Nov. 18	Pumping and sewerage work on fire house	L. E. McGann, Comr. P. S.
S. C.	Allendale	Nov. 18	Complete system of sanitary sewers, electric plant and water works	W. F. Googe, Chr. Com. P. W.
Fla.	Miami	Nov. 19	Garbage and refuse disposal	City Clerk.
Minn.	Red Lake Falls	1 p.m., Nov. 20	Sanitary sewer system	I. Lemieux, Secy.
Wis.	Appleton	9 a.m., Nov. 20	Sewer construction	City Clerk.
N. J.	Camden	Nov. 20	Construction of sewers	City Clerk.
S. C.	Lancaster	Dec. 1	Sewage disposal plant	John Crawford, Clk.
N. J.	Hackensack	Dec. 7	Sanitary sewer system, disposal plant and pumping station	City Commission.
Mont.	Roundup	Feb. 1, 1915	Main sewer and disposal plant	City Engineer.
<b>WATER SUPPLY</b>				
Wis.	Oconomowoc	Noon, Nov. 14	30 tons c-i. water pipe	C. H. Scheenike, City Clk.
La.	West Monroe	Nov. 14	Enlargement of water and light plant	N. G. Tippit, Mayor.
La.	New Orleans	Nov. 14	Water main and sewer extensions	Sewerage & Water Board.
O.	Wyoming	noon, Nov. 15	Water works improvements	H. E. Bienfang, Secy.
Ill.	Oglesby	Nov. 16	Artesian well 1650 feet deep	City Clerk.
Ill.	Hinsdale	Nov. 16	Installation of water softening plant	Village Board.
O.	Springfield	4 p.m., Nov. 16	Installation of deep well pump	Building Comm. for Infirmary Bldg. in Clark County.
O.	Springfield	4 p.m., Nov. 16	Deep wells and compression tanks	J. M. Pierce, Co. Aud.
Okla.	Morris	6 p.m., Nov. 16	Water works system	Board of Trustees.
N. J.	Woodstown	Nov. 16	Drilling one 8-inch well	Water Committee.
Ill.	Chicago	11 a.m., Nov. 16	Removing submerged crib from the lake	L. E. McGann, Comr. P. S.
Ill.	Chicago	11 a.m., Nov. 16	Water and sewer service pipes	L. E. McGann, Comr. P. S.
Ont.	Can. Port Hope	2 p.m., Nov. 16	Laying 1,800 ft. steel pipe	R. Gray, Sec. Water Comrs.
Ga.	Columbus	3 p.m., Nov. 17	Constructing water system	Board Water Comrs.
Md.	Baltimore	Nov. 18	Heating system for filtration plant and pumping station	Board of Awards.
S. C.	Allendale	Noon, Nov. 18	13,500 ft. 6-in. and 8-in. c-i. pipe, 35 fire hydrants, 42 gate valves, 100,000 gal. tank and tower, pumping plant, reservoir, etc.	J. Googe, Clk. Pub. Wks. Comr. of Pub. Works.
S. C.	Allendale	Nov. 18	Sewers, water works and electric light systems	

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. J.	Trenton	2.30 p.m., Nov. 20	Garage for the water department	F. Thompson, City Clk.
Ore.	Oregon City	2 p.m., Nov. 21	Water works construction, including dam and 25 miles of pipe line	William Anderson, South Fork Water Commission.
La.	New Orleans	Noon, Dec. 1	150,000 lbs. of 5-ft. and 12-ft. riveted steel pipe	J. S. Shield, Secy.
Cal.	San Francisco	Dec. 1	Construction of 2,000,000 gallon reservoir	Water Comr.
Greece	Athens	1915, Mar. 30	Water supply for Athens and additional cities, estimated cost, \$14,000,000	Bur. of Foreign & Domestic Commerce, Wash., D. C.

## LIGHTING AND POWER

Ind.	Indianapolis	10 a.m., Nov. 16	Electric equipment for asylum	Comrs. Marion Co.
Minn.	St. Paul	10 a.m., Nov. 16	425 lamp fixtures, 2,000 gas-filled incandescent lamps	Aug. Hohenstein, City Pur. A.
Ky.	Frankfort	Nov. 16	Erection of transmission lines	S. M. Lykins, Custodian
Va.	Richmond	Noon, Nov. 17	Supplies for the city gas works	W. P. Knowles, Supt.
Va.	Richmond	noon, Nov. 17	Gas oil for gas making, two million gallons per year	W. P. Knowles, Supt.
N. Y.	Bath	11 a.m., Nov. 17	Electric elevators	J. A. Golden, Soldiers' & Sailors' Home.
Ind.	Indianapolis	Nov. 17	Lighting parks, boulevards and bridges	Ed. of Park Comrs.
Tenn.	Fayetteville	Nov. 19	Lighting fixtures for post office	O. Wenderoth, Wash., D. C.
D. C.	Washington	Nov. 19	Steel rolling crest for dam	U. S. Reclamation Service.
Pa.	Philadelphia	Noon, Nov. 19	Tungsten lamps and fittings for street lighting and water departments	Herman Loeb, Dir. Board Public Works.
Ind.	East Chicago	1.30 p.m., Nov. 20	Electric current	City Clerk.
Ind.	Huntingdon	Nov. 23	Piping in power plant	Co. Building Committee.
N. J.	New Brunswick	2 p.m., Nov. 23	Electric wiring at Court House	Gen. Pur. Officer.
D. C.	Washington	10.30 a.m., Nov. 27	Incandescent lamp for Panama Canal	Park Commission.
Ind.	Indianapolis	10 a.m., Nov. 27	Lighting parks	J. Moulter, Chr. Pub. Service.
O.	Sandusky	noon, Nov. 30	Furnishing and operating street lighting system	F. R. Shunk, Lieut. Col. Engrs.
Pa.	Pittsburgh	Noon, Dec. 2	Wicket irons, horses, and props for dam	

## FIRE EQUIPMENT

N. Y.	Binghamton	Nov. 14	Fire station, \$14,000	Board Contract & Supply.
Tenn.	Chattanooga	Noon, Nov. 15	2,000 feet 2½-inch hose	Comr. of Fire.
N. Y.	New York	10.30 a.m., Nov. 16	Extension of fire alarm system	Robert Adamson, Fire Comr.
N. J.	Ventnor City	Nov. 16	Fire alarm and police telegraph system	Common Council.
Ore.	Portland	2 p.m., Nov. 16	One six-cylinder motor city service truck and one four-cylinder motor chemical engine	J. R. Wood, Pur. Agt.
Tex.	Sherman	7.30 p.m., Nov. 16	1,000 ft. 2½-inch cotton hose	Hy. Zimmerman, City Secy.
Cal.	Mare Island	10 a.m., Nov. 17	Furnishing fire and air hose for Navy Yard	Navy Pay Off., San Francisco.
N. J.	Orange	Nov. 17	Motor fire equipment	City Commission.
Miss.	McComb	8 p.m., Nov. 17	Motor combination chemical and hose	O. B. Quin, Mayor.
O.	Jacksonville	Noon, Nov. 18	Gas fire engine	Village Clerk.
Ill.	Chicago	11 a.m., Nov. 18	Construction of fire house	L. E. McGann, Comr. P. S.
Ill.	Springfield	10 a.m., Nov. 25	Motor combination pumping engine and hose wagon	Elmer P. Hill, City Clk.

## BRIDGES

Va.	Fort Monroe	2 p.m., Nov. 14	Concrete foot bridge	Quartermaster.
Fla.	St. Augustine	10 a.m., Nov. 15	Concrete bridge	W. W. Snow, Clk. Circuit Ct.
N. Y.	White Plains	Nov. 16	Concrete bridge	Wm. Mercer, Supt. Hwys.
Fla.	St. Johns	Nov. 16	Concrete bridge	W. W. Snow, Bd. Co. Comrs.
Conn.	Bristol	5 p.m., Nov. 17	Highway bridge, 70 feet long	T. B. Steele, City Clk.
S. D.	Letcher	Noon, Nov. 17	Steel and concrete bridges for 1915	John Kinsberg, Co. Aud.
S. D.	Brookings	2 p.m., Nov. 17	Steel and concrete bridges for 1915	F. H. Ripley, Co. Aud.
S. D.	Volga	Nov. 17	County bridges	F. H. Ripley, Co. Aud.
S. D.	Bellefourche	2 p.m., Nov. 17	Wood and steel bridges	F. E. Bennett, Co. Aud.
D. C.	Washington	2 p.m., Nov. 17	Reinforced concrete arch bridge	Comrs. Dist. of Columbia.
Neb.	Ord	Nov. 17	Concrete girder bridge	Co. Clerk.
S. D.	Castlewood	Nov. 18	Bridge construction for 1915	Guy Osborne, Co. Aud.
Ind.	Ft. Wayne	10 a.m., Nov. 19	Construction of a bridge across St. Mary's River	County Commissioners.
N. Y.	Albany	noon, Nov. 20	Bridge over canal	State Supt. Public Works.
S. D.	Sioux Falls	Nov. 21	Bridges for 1915	County Comrs.
S. D.	Sioux Falls	Nov. 21	Approaches for bridges	Board Co. Comrs.
Kan.	Independence	Noon, Nov. 23	Repairs to McTaggart Bridge	G. A. Otwell, Co. Clk.
N. J.	N. Brunswick	2.30 p.m., Nov. 23	Furnishing and placing 370 piles in the bridge over Raritan River	Board Chosen Freeholders.
S. D.	Colome	2 p.m., Nov. 24	Bridges in Tripp County	F. E. Wells, Co. Aud.
La.	Crowley	Nov. 28	Two steel bridges and approach	Police Jury.
O.	Columbus	Noon, Nov. 30	Approaches to Hell-Branch bridge	Comrs. Franklin Co.
O.	Marietta	1 p.m., Dec. 1	Cow Run bridge	Comrs. Washington Co.
Mich.	Lansing	Noon, Dec. 1	130-foot riveted Pratt truss	F. F. Rogers, State Hwy. Com.
S. D.	Mitchell	Dec. 1	Bridges for 1915	County Commissioners.
O.	Marietta	1 p.m., Dec. 1	Chuffy bridge in Waterford Township	Board County Comrs.
Ore.	Portland	11 a.m., Dec. 7	Eight steel swing bridges	Maj. J. J. Morrow, U. S. Engr.
Kan.	Salina	Dec. 15	Cement bridge over Smoky River	A. Godfrey, Co. Clk.
S. D.	Elk Point	Dec. 24	Bridge construction for 1915	Edward Holden, Co. Aud.
S. D.	Clear Lake	2 p.m., Jan. 6	Bridges in Deuel County	A. L. Larson, Co. Aud.

## MISCELLANEOUS.

H. I.	Pearl Harbor	11 a.m., Nov. 14	One narrow gauge, saddle tank switching locomotive	H. R. Stanford, Bureau Yds. & Docks, Washington, D. C.
Va.	Norfolk	Jan. 16	150 ton capacity floating revolving crane; cost, about \$450,000	Bur. Yds. & Docks, Navy Dept., Wash., D. C.
N. Y.	Syracuse	3 p.m., Nov. 16	Wiring and lighting system for Post Office	O. Wenderoth, Supt. Architect.
N. Y.	New York	3.30 p.m., Nov. 16	Repairs to Armory	Pres. Boro. Manhattan.
D. C.	Washington	2 p.m., Nov. 16	Canal construction	U. S. Reclamation Service.
D. C.	Washington	Nov. 17	Various supplies for Navy Department	Bureau of Supplies and Accts.
S. D.	Flandreau	1 p.m., Nov. 17	Wood furniture for Court House	G. H. Chorpensing, Aud.
Wash.	Puget Sound	10 a.m., Nov. 17	Garden hose	Navy Pay Office, Seattle.
N. Y.	Lockport	8 p.m., Nov. 17	Improvement of union school building	E. Belknap, Clk. Bd. Educat'n.
S. D.	Flandreau	9 a.m., Nov. 18	Metal furniture and light fixtures	G. H. Chorpensing, Aud.
La.	Baton Rouge	Noon, Nov. 18	Altering and repairing public building	City Clerk.
N. Y.	New York	11 a.m., Nov. 18	One automobile touring car	President Boro. Brooklyn.
Ill.	Rock Island	3 p.m., Nov. 18	Construction and repair of dam and shore protection	Geo. M. Hoffman, Maj. of Engineers.
O.	Cincinnati	2 p.m., Nov. 19	Reinforcing steel and metal lathing	Cap. R. V. Harper, Q. M.
O.	Cincinnati	10 a.m., Nov. 19	Constructing a steel hull for dredge	Col. H. Jervy, Custom House.
W. Va.	Charleston	noon, Nov. 21	Two-story building, 227 ft. long, for school of medicine	State Board of Control.
D. C.	Washington	2 p.m., Nov. 21	Rewiring patent office	F. Sweeney, Asst. Secy.
la.	Casey	2 p.m., Nov. 23	Construction of school house	C. E. Perry.
Okl.	El Reno	2 p.m., Nov. 24	Construction of Post Office	O. Wenderoth, Supt. Architect.
D. C.	Washington	Nov. 25	Extending and remodeling Post Office at Detroit, Mich.	Supervising Architect.
Wis.	Sparta	3 p.m., Nov. 30	Construction of Post Office	O. Wenderoth, Supt. Architect.
Pa.	Philadelphia	Noon, Nov. 30	Gasoline cutter	Washington, D. C.
Ill.	Robinson	2 p.m., Dec. 4	Construction of post office	Col. G. A. Zinn, 815 Wither- spoon Bldg.
D. C.	Washington	Dec. 5	Post Office at Morristown, N. J.	Supervising Architect.
N. Y.	Glens Falls	3 p.m., Dec. 17	Construction of post office	Supervising Architect.



## STREETS AND ROADS

**Benicia, Cal.**—Only ten votes were registered against proposition to issue \$10,000 worth of bonds to connect present Benicia city pavements with State highway. Proposed strip of road will practically complete Benicia's \$100,000 street system, one of best in State.

**Chico, Cal.**—The Chico City Trustees have ordered immediate construction of 1,139 ft. of sidewalks in District No. 2.

**Lodi, Cal.**—Appropriation of \$15,000 from State is being urged, to build six miles of road between Clements and Mokelumne River.

**Pomona, Cal.**—City Council has adopted specifications which are to govern extensive job of paving, bids for construction of which are to be asked for without delay. City purposes to advertise for bids on work of doing its share of paving—which will amount to \$75,000—by private contract, and not under Vrooman act. Then it will give contractor to which job is awarded opportunity to sign up property owners and do their share of paving at the same figure.

**Sacramento, Cal.**—Organization has been formed at Chamber of Commerce which will perfect plans to launch campaign for bonds to construct good roads in Sacramento County.

**Santa Ana, Cal.**—Highway Commission is preparing to begin active operations soon on section 3 of Riverside road extending from Olive to Peralta. Commission hopes to be able to advertise for bids by middle of November. When, in addition to foregoing work, the 2½-mile strip of road from Anaheim to Olive is advertised for bids all work called for under the \$1,250,000 good roads bonds will have been completed or under way.

**Santa Ana, Cal.**—The surfacing of a half-mile section of Olinda road, running from old Placentia store to present town of Placentia, has been rejected by Orange County Highway Commission. Section will be resurfaced by commission, with its private outfit.

**Vacaville, Cal.**—A \$30,000 bond issue for street improvements in Vacaville is being prepared for submission to voters. Bond issue will be divided—\$12,000 for Main St. improvements and \$18,000 for grading and graveling residence districts.

**Visalia, Cal.**—Tulare County will vote Dec. 3 on question of issuing road bonds in sum of \$1,488,555.

**Yuba City, Cal.**—Proposed link of State highway from this city to northern end of county, a distance of over 11 miles, has been assured when Board of Supervisors announced that arrangements had been made for sale of \$110,000 in bonds necessary for project, and made arrangements for publication of notice asking for bids. Specifications call for concrete macadam road. Bids will be opened in December and efforts made to have the road completed within a year.

**St. Augustine, Fla.**—Ordinance has been passed for paving of Cincinnati Ave.

**St. Augustine, Fla.**—Bids for widening and paving Central Ave. have been readvertised.

**Rome, Ga.**—The Floyd County Commissioners have practically decided to widen Summerville Road.

**Bloomington, Ill.**—Paving of east roadway on Clinton boulevard, from Emerson to Division Sts., is being planned.

**Chicago, Ill.**—Issuance of \$2,000,000 worth of bonds for building Cook County roads has been approved.

**Chicago Heights, Ill.**—Bids will be received at 8 p. m., Nov. 17, for 28,645 sq. yds. reinforced Portland cement concrete pavement, 20,210 lin. ft. 5-in. concrete curb, 756 lin. ft. of crossing curb, 84 cast iron crossing plates, adjusting 31 manhole covers and 32 catch basin covers, total estimate being \$68,423.69. M. H. McCoy is City Engineer.

**Galesburg, Ill.**—Board of Local Improvements has presented to Council ordinance for paving of Allen's Ave. from Main to South St. and Mulberry St. from Burlington tracks to Pine St. and ordinance was passed under suspended rules. Estimated cost of engineer was \$26,232.77.

**Peoria, Ill.**—There was only one bid for paving of Walnut St. when Board of Local Improvement met to award the contract. The bid was from Jansen & Zoeller of this city, whose figure was \$1.79 a sq. yd. Estimate was \$1.70, with 10 cts. per yd. added for excavation, making estimate \$1.80. The bid submitted was on Purington brick, made

at Galesburg. Samples of paving brick made at East Peoria have been received by Board and tests show they are equal to higher-priced brick. It is probable they will be specified when bids are asked on state-second district. It is possible Walnut St. contract may be readvertised and let at same time as state-second job, when better figure may be obtained.

**Quincy, Ill.**—Following are bids received for concrete curb and gutter for Soldier and Sailors' Home: Hufnagel Concrete Construction Co., Quincy, \$1,999.98; Jos. Eiff & Son, Quincy, \$1,242; Clough Concrete Co., Quincy, \$2,229; St. Clair Eng. & Constr. Co., Belleville, \$2,011.

**Sterling, Ill.**—City Engineer John D. Arey has commenced work of surveying in order to prepare estimates for repaving Third St. from Ave. B to Third Ave., building of 18-in. combined curb and gutter and condemnation of all sidewalks within limits of improvements which do not measure up to standard to be determined by commission. It is proposed by Mayor and committee to pave street with paving blocks, using an asphalt filler.

**Sterling, Ill.**—Practically every property owner of East Fourth St. from Fourth Ave. to Broadway has signed petition which was presented to Council asking that street be improved by taroid macadam. Petition has been referred to the Board of Local Improvements.

**Streator, Ill.**—Commissioners of highways will secure estimate of paving another mile of North Bloomington rd.

**Indianapolis, Ind.**—Resolution for paving Parkway boulevard, from 18th to 30th Sts., has been adopted by Board of Public Works. Pavement is to be 35 ft. wide and estimated cost is \$97,716, estimate being based on highest priced material, wooden block, as required by law. In event improvement is made a large part of cost will fall on Board of Park Commissioners, as Riverside park is along one side of street.

**Burlington, Ia.**—Resolution has been passed ordering paving of Summer St.

**Marshalltown, Ia.**—Marshall county has gone on record as being willing to help maintain portion of Lincoln highway pavement, which is to be laid next year. On promise that business men would build two miles of paved Lincoln highway, first to be laid in Iowa, highway association a few months ago donated to this city 2,000 barrels of cement to be used in the construction.

**Emporia, Kan.**—Ordinance has been passed providing for grading, draining, curbing, guttering and paving of 10th Ave., from west side of State St. to east side of Rural St.

**Pittsburg, Kan.**—Ordinance has been adopted to provide for curbing and guttering, grading and paving of Ninth St. from west line of Broadway to west line of Walnut St., known as Curbing District No. 69-C and Paving District No. 88-P.

**Salina, Kan.**—Effort is to be made to have Bishop St., street approaching Union Depot site from east, extended on west to connect with College Ave., and thus provide another approach to depot.

**Somerset, Ky.**—By action of Pulaski County Fiscal Court 20 miles of modern pike is to be constructed, from Somerset to Lincoln county line, at cost of \$40,000. Court decided to provide 15 per cent. of road levy for 1915 for this purpose. State's share of work will be \$20,000.

**Patchogue, L. I.**—Petition has been presented to Village Board of Trustees by taxpayers to lay out streets, to be known as continuation of Gerard Court and Maiden Lane. Board will sit Nov. 11 to 13 to consider petitions and listen to any objections.

**Baltimore, Md.**—See "Miscellaneous."

**Baltimore, Md.**—Chairman Weller of State Roads Commission has announced that plans have been prepared to complete Baltimore-Annapolis Boulevard next year, and that necessary contracts will be let early in season. Sections yet to be built are from Glen Burnie to Pumphrey and from Pumphrey to the English Consul Estate, a short gap between the Western Maryland railroad at Westport and the Baltimore and Ohio railroad at Ridgely St. and the stretch between the Severn River bridge and Annapolis.

**Colrain, Mass.**—Sum of \$1,000 has been raised and appropriated to continue state road extension further along traveled way toward Vermont line in North River Valley.

**Holyoke, Mass.**—Bids have been opened by Board of Public Works for resurfacing Maple St., in front of new central fire station. Bid submitted by Daniel O'Connell's Sons of \$1.33 a sq. yd. for asphaltic concrete surface was received as well as one of \$1.75 a sq. yd. for building granolithic sidewalk on west side of street should Board decide to do this work. Board also received a bid of \$12 a thousand from Nolan & Mitchell, of Chester, for recutting granite blocks on Main St. No action on any of these bids.

**Shelburne Falls, Mass.**—Sum of \$1,500 has been voted as special appropriation for highways and bridges.

**Springfield, Mass.**—Widening of Taylor St. is being discussed.

**Flint, Mich.**—Bond issue to cover city's share of cost of pavements has been voted favorably.

**Turner, Mich.**—Election has been carried in favor of issuing road bonds to the amount of \$15,000. A. H. Townsend is Township Clerk.

**Crookston, Minn.**—Bids for paving bonds or certificates of indebtedness to be issued by city to defray cost of paving S. Ash St., Spendley St. and Holly Ave., in said city, will be received at City Clerk's office until 8 o'clock p. m., Nov. 10, 1914. Lewis Ellington is City Clerk.

**St. Joseph, Mo.**—Ordinances have been adopted for improving of various streets by paving, etc.

**St. Joseph, Mo.**—In planning the new roadway through addition to Krug Park, arrangements have been made for northwest entrance to park, for connection with road to water works by way of what is known as Steinacker Road.

**Grand Island, Neb.**—Petition for new paving district on Fourth and down Walnut to the Liederkranz has sufficient signers and it will be presented to City Council within a month for action. Petition provides for eight blocks of paving, on Fourth St. four blocks from Locust to Elm St. and four blocks south of Walnut, from Fourth to First St.

**Cranbury, N. J.**—Appropriation of \$1,500 has been made for roads.

**Hampton, N. J.**—Sum of \$1,500 has been appropriated as township's share of improving road from Quince's store to Newton line near Smith's Hill.

**Linden, N. J.**—Township Committee will macadamize Dennis Pl. and Bachelor Ave.

**Millville, N. J.**—It is proposed to permanently improve public road extending from Plum St. to intersection of Maurice town Road in Maurice River Township.

**Millville, N. J.**—The Millville Municipal League has been assured by Cumberland County Board of Freeholders that proposed road from Millville to Cape May County line is to be constructed in near future.

**Newton, N. J.**—State road department will begin work in spring with gang of State convicts on proposed macadam road from Layton to Dingmans, Pa., the last link in continuous improved road across Sussex County. Route for road, which will be about two miles long, has been laid out by County Engineer Harvey Snook. It will eliminate two heavy hills.

**Newton, N. J.**—Board of Freeholders will shortly open bids for building five miles of road from Newton to Sparta.

**Paterson, N. J.**—A plan to connect Paterson and Passaic by five main thoroughfares was discussed at joint meeting of committees of Paterson Chamber of Commerce and Passaic Board of Trade.

**Duanesburg, N. Y.**—Town Board has voted \$4,000 for highway work.

**Niskayuna, N. Y.**—Board has appropriated \$3,581 for highway purposes.

**Rensselaer, N. Y.**—Resolutions have been adopted directing city engineer to prepare plans for grading of Second St., from McNaughton Ave. to Washington Ave.

**Scarsdale, N. Y.**—Election has been carried in favor of issuing highway bonds in sum of \$75,000. Alexander M. Cross is Town Supervisor.

**Syracuse, N. Y.**—Ordinances have been adopted declaring intention to order following pavements: In Sherwood Ave. from Burnet Ave. to Robinson St., and in Robinson St. from Sherwood Ave. to Sedgwick St.; in Sumner Ave. from Cumberland Ave. to Stratford St.; in Pine St. from East Genesee St. to East Water St. Alderman Davin has vitrified block and Medina sandstone designated as the materials for paving Oak St. from Green St. to Burnet Ave.

**Waterloo, N. Y.**—Appropriation of \$46,000 to provide improvement, as state-county-village highway, of East Main St. and parts of Washington and River Sts. In this place has been carried at special election by vote of 511 to 22. Of amount appropriated by village \$18,000 will be paid by general taxpayers, \$13,000 by abutting property owners, \$14,900 by street car company. Total estimated cost of improvement, which includes brick pavement of streets named, is \$87,000, balance being paid by the state and county.

**Waterloo, N. Y.**—Election has resulted in favor of issuing highway improvement bonds in sum of \$47,000.

**Berlin Tp., O.**—Proposition to issue road improvement bonds in sum of \$20,000 will shortly be submitted to voters.

**Delaware, O.**—Notice is given that Board of County Commissioners of Delaware County, Ohio, will sell county improved road bonds to amount of \$144,400 on Nov. 16, 1914, at 1 p. m., at office of the County Commissioners of Delaware County, O.

**Jackson, O.**—Proposal to issue \$50,000 bonds for road improvement has been carried.

**Sandusky, O.**—Petitioners residing on Polk St., between Hayes Ave. and Central Ave., have asked that highway be improved by laying of sheet asphalt, construction of concrete curb and gutter. Petition has been referred to No. 1 committee.

**Sandusky, O.**—Under head of petitions, residents of Washington Court have asked Council to provide legislation for improvement of street by construction of sewer, water line and pavement. Matter has been given to the No. 1 committee.

**Youngstown, O.**—Ordinance to pave Broadway from Griffiths to Wirt Sts. and to install sewers on this thoroughfare has passed to its second reading.

**Youngstown, O.**—Resolution has been made to grade Craven St., from Federal St. to Victoria St.

**Youngstown, O.**—Resolution has been passed for paving of Highview Ave., from Mahoning Ave. to end of street.

**Oregon City, Ore.**—Paving of Main St. is being planned.

**Prairie City, Ore.**—Construction of new Long Creek Prairie City Rd. will commence at once.

**Seaside, Ore.**—Resolution has been passed by Town Council which provides for issuance of Broadway improvement bonds in sum of \$5,102.

**Chester, Pa.**—Ordinance has been passed providing for paving of roadways of 24th St., from Edgmont Ave. east to Crosby St., and 19th St., from Hyatt St. to Washington Blvd., with asphalt, bitulithic, fibbertine, warrenite, amiesite, wood-block, vitrified brick or block, or any other improved, modern, hard, and durable street paving material. J. H. Mirkel is City Clerk.

**Connellsville, Pa.**—Sum of \$45,000 has been voted, which will form the nucleus of a street improvement fund. It is proposed to market the bonds as soon as possible in order that permanent improvements may be started early next spring. It is expected that fully 5½ miles of paving will be done next year.

**Lebanon, Pa.**—County Commissioners have signed petition of residents of Fifth Ward along Lehman St., between Fourth and Eighth, for paving that thoroughfare.

**Lebanon, Pa.**—The paving petition which has been circulated among property owners on Lehman St., between 4th and 9th Sts., will be presented to County Commissioners for their approval.

**Miners Mills, Pa.**—It has been voted to increase indebtedness of borough by \$40,000 for streets and sewers.

**Pittsburgh, Pa.**—Four ordinances providing for total bond issue of \$5,430,000 have been introduced at special meeting of council and later affirmatively recommended at meeting of finance committee. Plan under which they are to be passed has been approved by bond buyers of East and it is understood there will be ready sale for them. One issue is to be for \$2,760,000, to fund floating debt, another for \$1,068,000 for raising streets in the Penn Ave. district, another for \$735,000 for Mt. Washington roadway, and fourth for \$867,000 for widening and improving of Grant Blvd.

**Philadelphia, Pa.**—Resolution has been passed providing for \$224,033 for street repairs.

**Spangler, Pa.**—Proposition has been carried to increase indebtedness by \$3,500 for improving streets.

**West Reading, Pa.**—Council has passed ordinance over veto of Burgess to place before voters at special elec-

tion Dec. 1 loan of \$25,000 for street improvements.

**Barrington, R. I.**—Sum of \$7,500 has been appropriated for highways for 1915.

**East Providence, R. I.**—Appropriation of \$2,000 for oil for highways is recommended.

**East Providence, R. I.**—Council has recommended special appropriation to block-pave Taunton Ave. Estimated cost, \$12,000. Special appropriations are recommended as follows: First District—Taunton Ave., \$12,000; Burgess Ave., \$2,500. Second District—Wilson Ave., \$1,800; Newman Ave., \$600; Centre St., \$4,000. Third District—Bullock's Point Ave., \$1,000; Shore Rd., \$1,000; Read St., \$1,500; Pawtucket Ave., \$2,500.

**Austin, Tex.**—The Attorney General's Department has approved issue of Garza County road and bridge bonds in sum of \$50,000.

**Belton, Tex.**—The good roads bond issue election has been carried.

**Magnolia Park, Tex.**—See "Water Supply."

**Temple, Tex.**—City is now assured of at least eight miles of durably paved streets in residence district as result of action taken by Bell County Commissioners at Belton when latter held an executive session with Temple City Council and agreed that method of improving streets out of road district bond money should be left to discretion and management of Council within city limits. Bids will be opened at Belton on Nov. 13 for concrete, vitrified brick and other forms of permanent pavement in Temple. Plan is to build eight miles of streets 18 ft. wide and property owners are to extend paving at their own expense from curb line to meet pavement, thus extending same over full width of street improved.

**Temple, Tex.**—Property owners along North 9th St. between Adams Ave. and French Ave. have passed resolution to effect that that street will build 30-ft. permanent pavement and also install curbs and gutters providing proper authorities designate that highway as part of system to be improved with Temple's share of bond issue.

**Salt Lake City, Utah.**—Following paving is planned for 1915: 13th East past new High School East to 9th South; 11th East from Yale Ave. to 12th South; 12th South from 5th to 9th East; State from North Temple to the capitol. Possibly 6th Ave. if residents petition for it.

**Burlington, Vt.**—Resolution has been adopted on favorable report and recommendation of Street Commissioners to build concrete sidewalk on east side of South Union St., between Pearl and College Sts., and to put in crosswalk at Bradley St. Resolution was also adopted to build cement sidewalks on both sides of South Champlain St., between Cherry and Pearl Sts.

**Lynchburg, Va.**—Main St. improvement will be pushed as rapidly as possible, according to special committee recently appointed by City Council. Committee has decided to endorse action of street committee and to recommend asphalt for two sides of street and granite block for center of street. Committee will ask Council for the \$65,000 already held for Main St. improvement.

**Seattle, Wash.**—Resolutions have been adopted for improvement of various streets.

**Seattle, Wash.**—Plans have been approved for paving of 16th Ave., South, 9th Ave., West, and Utah Ave., and plans have been received from engineer for paving of 37th Pl., estimated cost of \$18,000, and paving Brooklyn Ave. at estimated cost of \$61,000.

**Superior, Wis.**—Members of roads and bridges committee of Douglas County board will recommend road levy of \$100,000 at annual meeting of board to be held next month. Plans for road work, estimated to cost over \$100,000, have been outlined, but committee decided that levy of more than \$100,000 was not advisable at this time. Plans for improving 36 miles of county highways have been outlined for next year. Committee will also urge completion of road in Douglas County to connect with Ashland-Bayfield road at Bayfield County line. It is estimated this work will cost Douglas County approximately \$18,000. Roads and bridges committee has already recommended the Dewey route in preference to proposed military road to Carlton County, Minn., line, and no action was taken.

#### CONTRACTS AWARDED.

**Birmingham, Ala.**—By Board of Commissioners, to George Fromhold, Birmingham, for improving 33d Ave. from

27th to 28th Sts. Work consists of 800 cu. yds. excavation, 1,500 lin. ft. combined curb and gutter, 500 yds. chert and 500 cu. yds. slag; cost, \$2,000. Sidewalk paving on 4th Ave. south from 38th to 41st St.; 1,000 sq. yds. sidewalk and 50 sq. yds. brick alley paving; cost, \$700. Contract was awarded to J. L. Mullarky, Birmingham, for sidewalk paving on 2d Ave. south from 76th to 77th St.; 250 sq. yds. cement walk and 480 lin. ft. combined curb and gutter; cost \$500; Julian Kendrick is City Engr.

**Clanton, Ala.**—By Chilton County Commissioners, to J. G. Brown, of Montgomery, at about \$25,000, to construct county's portion of Montgomery-Birmingham highway.

**Selma, Ala.**—By city, to Jamison & Hollowell, Montgomery, Ala., to construct concrete pavement with bitumen wearing surface. J. B. Converse is City Engr.

**Wedowee, Ala.**—To Nixon Smith Constr. Co., of Deatsville, at \$8,000, for state-aid contract. It will consist of 6½ miles of grading. W. S. Keller is State Engineer, Montgomery.

**Pasadena, Cal.**—Contracts for street improvements on Ashtabula St., Hill Ave. and Stevenson Ave. were, on motion of Commission of Public Works T. D. Allin, awarded as follows: J. C. Kinsman, Pasadena, contract for Ashtabula, consisting of grading, oiling, curbs and gutter, between Madison Ave. and El Molino Ave. Mr. Kinsman's bid was \$1,312.05. The other bids were as follows: H. E. Cox, \$1,553.50; Thomas C. Breitenstein, \$1,590.15, and Charles A. Baldwin, \$1,528.20. Contract for improvement of Hill Ave. from Washington St. to north city limits, was awarded to Thomas C. Breitenstein, Pasadena. His bid was \$772.60. H. E. Cox bid \$887.60. Improvement calls for grading, oiling, curbs and gutters. Stevenson Ave. improvement will be done by Thos. C. Breitenstein. His bid was \$9,060. Other bids were as follows: H. E. Cox \$10,170, and Charles A. Baldwin, \$9,171. Avenue is to be paved and gutters installed between East Orange Grove Ave. and Washington St.

**Denver, Col.**—For constructing 8½ miles of road from Pagosa Springs to top of Wolf Creek Divide, to Lowell & Logan, Pagosa Springs, at \$19,691.

**Bridgeport, Conn.**—For widening of Congress St., between Main St. and Housatonic Ave., on northerly side, petition has been presented to Board of Aldermen by F. D. Keeler.

**Chicago, Ill.**—By Board of Local Improvements, for construction of cement sidewalks on various streets, to A. P. Larson, Simpson Construction Co., West Englewood Construction & Supply Co., Hanson-Undine Co., Robert R. Anderson, Siewerth-Carlson Co., G. Kehl & Son Co., Robert R. Anderson, H. Johnson & Co. and General Cement Construction Co.

**La Salle, Ill.**—Bids for proposed contracts for paving 6th St. from Sterling to Union St. and for improvement of North Marquette and 12th Sts. and north of local R. I. Ry. depot, have been opened. The T. W. Keys firm was awarded job on 6th St., but, although this firm's bids on two other jobs were also the lowest, matter of awarding these contracts was deferred. The various bidders and sums bid are as follows: 6th St. job—T. W. Keys, La Salle, \$2,676.90; Trompeter & Sons, Peru, \$2,722.80; Henry Zolper & Son, Mendota, \$2,712.14. North Marq. and 12th St.—T. W. Keys, \$10,389.28; Zolper & Son, \$10,545.98; Trompeter & Sons, \$10,619.13. R. I. Ry. Station Job—T. W. Keys, \$893.71; Henry Zolper & Son, \$906; Trompeter & Son, \$909.50.

**Indianapolis, Ind.**—For constructing road on line between White and Tippecanoe Counties, to Ben Oiler, Battle Ground, at \$12,300.

**Paoli, Ind.**—For constructing gravel road, to A. L. Wayrick, French Lick, Ind.

**Shelbyville, Ind.**—Kernodle, Dale & Fulwider, of Lebanon, have received contract from County Commissioners for building of Greene Road in Shelby County. Their bid was \$11,820. Ogden & Kent of this city received contracts for following roads: Howe Road, \$5,364; Shadelly, \$11,768; Fox Road, \$3,723.

**Spencer, Ind.**—For constructing Lafayette Township Road by County Commissioners to Wood & Carpenter, Spencer, Ind., at \$7,447.

**Emporia, Kan.**—For paving of Tenth Ave., from State St. to Rural St., to J. R. Ramsey.

**Vanceburg, Ky.**—For constructing 1½ miles of water-bound macadam road, to James I. Hill.



**Alexandria, La.**—For paving with gravel Lee St. by City Council to F. T. Constance, at \$10,000.

**New Orleans, La.**—For constructing main public highway from Covington to Washington Parish Line, St. Tammany Parish, to John P. Kennedy, 95 Convention St., Baton Rouge, at \$23,505. Other bids were: W. E. Geren, \$23,957; Hemingway Bros., \$32,070; H. J. Bonnabel, New Orleans, \$28,658; S. A. Gano, \$31,248; S. K. Jones, \$26,924; J. M. George & Son, Joquin, Tex., \$26,906; Boyd & Bradshaw, Columbia, Miss., \$24,492.

**Marblehead, Mass.**—By Board of Selectmen contract for building of Wyman and Bubier Rds. Five bids were received, contract being awarded to T. A. Moynihan of South Hamilton, the lowest bidder. The bids were as follows: T. A. Moynihan of South Hamilton, \$5,199; A. French of Swampscott, \$5,675; M. McDonough of Swampscott, \$5,750; Porter Ice Co. of Marblehead, \$5,756; M. L. Kelley of Peabody, \$10,799.

**Detroit, Mich.**—For paving Sterling Ave. from Holden Ave. to West Grand Blvd., to J. Porath, at \$5,708. Other bids were: Otis Cement Construction Co., \$5,876; F. Porath & Son, \$6,291; E. Meredith Co., \$6,994; T. E. Currie, \$6,266; Central Ave., from Lodge to Ferndale Ave., to Otis Cement Construction Co., at \$13,598. Other bids were: J. Porath, \$14,606; F. Porath & Son, \$14,841; E. Meredith & Co., \$14,779; J. A. Mercier, \$14,270; T. E. Currie, \$15,030.

**St. Paul, Minn.**—Following are low bidders on several small contracts: Martin Eberhart, \$725 for grading of Wentworth, from Doane to St. Anthony Ave.; Thornton Bros., \$3,887 for grading of Clarence St., from Burns Ave. to Hudson Rd.; Feyen Construction Co., \$1,325.35 for the grading of Minnehaha St., from Western Ave. to Arundel St.

**Meridian, Miss.**—Contract for laying of 4,820 sq. ft. of concrete sidewalk paving at Tuxedo School, 1,495 sq. ft. paving at Highland School, 15 lin. ft. of concrete steps at Highland School, 12 1-5 cu. yds. of curbing and fence at Highland School has been awarded to A. H. Frieberg, contractor.

**Cranford, N. J.**—Township Committee has awarded contract for construction of cement sidewalks in Rankin, Columbia and Orange Aves. to E. L. Moore, of Cranford. Mr. Moore bid 54 cts. per ft. for Rankin Ave. walks and 48 cts. per ft. for others.

**Metuchen, N. J.**—For grading Home St. to Charles T. Pates, Grove Ave., Metuchen, at 49 cts. per cu. yd.

**Trenton, N. J.**—By State Department of Public Roads for repair of gravel roads of South Jersey to John L. Le Compte, of Egg Harbor, & Richard Hafeman, of Freehold. Improvement consists of a lignite binder on 112.3 miles of gravel roads in South Jersey at cost of \$104,800. Roads to be treated run from Matawan to Freehold, to Lakewood, to Toms River, to West Creek, to Manahawkin, to Tuckerton, to Bass River, to Chestnut Neck, to Absecon, to Egg Harbor, to Hammonton, to Berlin.

**Union, N. J.**—At regular monthly meeting of Township Committee contract for grading Maple Ave., in Vauxhall section, was awarded to Robert W. Smith Corporation at 38 cts. per cu. yd. The other bidders were: J. H. Schmidt, Jr., at 49 cts. per cu. yd., and George Krouse at 39 cts. per cu. yd.

**Brooklyn, N. Y.**—Contract for furnishing to Bureau of Highways of Queens, 4,000 cu. yds. of broken stone and screenings of trap rock, has been awarded to Thomas F. Tuohy & Co., at \$9,480. There were four bidders. James J. McIntyre was successful bidder for regulating and grading Manley St., Long Island City, from Hunter's Point Ave. to Thomson Ave., at \$2,950. There were five bidders.

**Kingston, N. Y.**—For grading new school grounds on Broadway opposite city hall and laying sidewalks to Henry McNamee for concrete walks at \$9,500.

**Lockport, N. Y.**—For construction of new sidewalk on Harrison Ave. to H. E. Whitney at \$1,084.

**Penn Yan, N. Y.**—For constructing road from Kueka St. in Penn Yan to Esperanza, distance 6 miles, to Chas. N. Kelly, Penn Yan. Section in Penn Yan to be paved with brick and outside city limits with macadam.

**Canton, O.**—County Commissioners have approved award by State Highway Commissioner Marker to Frank L. Cohen, of Buffalo, N. Y., of contract for paving and improving Canton-Massillon Road from end of present pavement to Massillon city limits. Grading and preliminary work probably will be done this winter and actual construction will

commence as early in spring as weather will permit. Cohen's bid was \$102,806.

**Cincinnati, O.**—For improving Humphrey's Hill, in Symes Township, and Hoover Road, in Whitewater Township, to James L. Radabaugh, Montgomery, O., at \$5,880.

**Columbus, O.**—For construction of road in Perry Township to Morgan Bros. at \$6,980.

**Hamilton, O.**—State Highway Commissioner James R. Marker has awarded contract for the 6½ miles of the Columbia Bridge Road to Garver & Wirtz at their bid of \$10,702.58. Parts of the road to be constructed lead south from Columbia bridge site for certain distance and lower section extends past old Dick Brown Farm on river road. Material to be used is macadam.

**Bartlesville, Okla.**—By city, to Granite Bituminous Paving Co., St. Louis, Mo., for paving two blocks Wyandotte Ave. with bitulithic on 4-in. concrete base.

**Tulsa, Okla.**—For improving several streets, to F. P. McCormick, Tulsa, Okla.

**Tulsa, Okla.**—By city, to Parker-Washington Co., Kansas City, Mo., for paving about 20,000 sq. yds. with asphaltic concrete.

**Eric, Pa.**—L. Vincent Metz, assistant city engineer on furlough, has been awarded contract by State Highway Department to pave Buffalo Road, from city limits, 9,000 ft. east. His bid was for \$56,000, type A pavement, 26 ft. wide, plans for which provide that the street car tracks be laid in center of roadway.

**Harrisburg, Pa.**—For paving 17 streets with asphalt, in all about 31,373 sq. yds., and 17,590 lin. ft. curb, to Central Constr. & Supply Co., Harrisburg. This company bid on Natural Lake asphalt at \$1.72 to \$2 per sq. yd., prices being for different streets, and 80 cts. per lin. ft. for all curb. W. H. Lynch is Supt. Streets and Pub. Improv.

**Harrisburg, Pa.**—Three bids for construction of new entrance to Reservoir Park and proposed driveway have been opened by Commissioner Taylor. The Stucker Brothers' Construction Co. was low bidder at \$3,779 and will probably be awarded the contract. S. W. Shoemaker & Son bid \$7,683 and D. Ott & Son, of Camp Hill, bid \$8,100.

**Ridgfield, Wash.**—Hayden & Bidwell, of Portland, have contract for construction of two miles of Pacific Highway between La Center and Woodland, and will begin operations immediately. Contract calls for crushed rock surfacing, and contract price is \$6,960.

**Seattle, Wash.**—For paving Dearborn St. to Krogh & Jessen, Seattle, at \$30,174.90.

## SEWERAGE

**Anniston, Ala.**—Ordinance has been adopted for construction of sanitary sewers along various alleys. W. O. Ward is Clerk.

**Ontario, Cal.**—Election will be held Nov. 10 for voting on \$55,000 bond issue for sewers. Address R. R. Brackenberg, City Clerk.

**Santa Monica, Cal.**—City Council will submit to voters proposition to issue storm water sewer bonds in sum of \$225,000.

**South Pasadena, Cal.**—After purchasing, in early part of year, \$120,000 worth of South Pasadena sewer bonds the Harris Trust and Savings bank of Chicago have petitioned city trustees for opportunity to purchase remaining \$80,000 of \$200,000 bonds voted for building of sewer system a year ago.

**Ocala, Fla.**—Bonds for sewerage, calling for expenditure of \$100,000 have been voted.

**Augusta, Ga.**—Ordinance has been passed to provide for construction and laying down of following sewer on Druid Park Ave., from Parnell St. to Gwinnett St.

**Atlanta, Ill.**—Melluish & Broyhill, Bloomington, Ill., consulting engineers, have prepared plans for constructing sewer system. About two miles of pipe will be wanted.

**Bloomington, Ill.**—Question of sewage disposal is being discussed.

**Peoria, Ill.**—The upper end sewer will be begun by Nov. 10 and completed by March, and if the south end sewer can be gotten under way it will provide employment for hundreds of men. The mayor has signed ordinance authorizing same.

**Springfield, Ill.**—Ordinance providing for building of White City sewer, extending from point near southeast of White City to Bergen branch, a distance

of 1,200 ft., at cost of \$4,500, has been passed finally. Sewer will be 5 ft. in diameter.

**Fort Wayne, Ind.**—Board of works ordered plans prepared for sewer to drain Pfeiffer Place addition, a right-of-way having been secured across St. Vincent's orphanage grounds.

**Lafayette, Ind.**—Board has received petition for lateral sewer on south side of Oregon St. City engineer has been instructed to prepare plans and specifications.

**McGregor, Ia.**—Petition will be circulated asking that an engineer be employed to draw plans and make estimates of cost of installing sanitary sewerage.

**McGregor, Ia.**—Establishment of city sanitary sewer system is recommended.

**Hutchinson, Kan.**—City Commission is negotiating with United Water, Gas & Electric Co. for contract to furnish new sewage pumping plant with power. Plant is to be installed near creek, south of State Reformatory corner. The city expects to get current at 3½ cents per kilowatt rate. Light company is asking for contract running uniform with present city contract, which runs nine years. Engineer McLane estimates that at this rate cost of operating pumping station will be \$1.50 per day.

**Lexington, Ky.**—Ordinances have been passed ordering construction of sanitary sewers on various streets.

**Baltimore, Md.**—See "Miscellaneous."

**Boston, Mass.**—Early in the spring Commissioner Rourke will start work of connecting four large trunk sewers which empty into Dorchester Bay at Strandway with main sewerage system having outlet at Calf Pasture. One of these sewers is regarded as serious menace to health as it flows into water at Carson Beach where many children bathe.

**St. Cloud, Minn.**—The Commission has rejected all of bids for sewer extension on 9th Ave. north between hospital and Great Northern tracks and decided to do work under supervision of superintendent of water works. Engineer's estimate was between \$800 and \$900, while lowest bid was \$1,021.

**St. Joseph, Mo.**—Ordinances have been adopted for construction of sewers in various streets.

**Dunellen, N. J.**—William Deering, clerk of Borough Council, has been authorized to advertise for bids for collecting system of sewers in this place. There will be about 14 miles of piping. Estimated cost will be \$90,000. Of this amount \$55,000 will be raised through issue of bonds, while rest will be obtained through direct tax. This sewer will connect with joint system to be built by Plainfield, North Plainfield and Dunellen.

**Lyndhurst, N. J.**—At cost of \$750 the Union Township Board of Commissioners has decided to instruct its engineers to prepare preliminary plans for installing sewer system.

**Milltown, N. J.**—Without a dissenting vote Council adopted on third and final reading ordinance providing for issuance of bonds in sum of \$12,500, to pay portion of cost of sewage disposal plant for Borough of Milltown.

**New Brunswick, N. J.**—City Council has approved of ordinance providing for issuance of sewer bonds in sum of \$12,500.

**Plainfield, N. J.**—By unanimous resolution it was voted to advertise for bids for contract of laying borough's collecting sewerage system. About 14 miles of sewer pipe will be laid, which together with two pumping stations, one to be erected at Washington Ave. and 6th St. and other on Bound Brook Rd. near Schwartz Pl., and cost of engineering service, etc., will probably cost borough about \$90,000. Of total cost, \$55,000 will be raised by sale of bonds, and balance by direct assessment against property benefited.

**Trenton, N. J.**—Ordinance has been passed to authorize construction of sewer No. 607, in Lawton Alley.

**Bronxville, N. Y.**—Sewer will be constructed in Kraft Ave., for which plans have been approved by State Conservation Commission.

**Goshen, N. Y.**—Construction of sewer house connections are being discussed.

**Niles, O.**—Resolution has been adopted declaring it necessary to construct storm sewer in sewer district No. 1.

**Salem, O.**—Determining to proceed with construction of sanitary sewer along Garfield Ave., City Council has passed ordinance to that effect, and authorized service director to advertise for bids for construction of sewer.

**Salem, O.**—Ordinance has been adopted for improvement of Garfield Ave. by constructing intercepting sanitary sewers.

**Sandusky, O.**—West End sewer bonds in sum of \$50,000 will be sold.

**Barrett, Pa.**—Township will construct addition to its sewage treatment plant. State Department of Health has approved plans.

**Erie, Pa.**—Following ordinances have been passed finally: Providing for construction of a sewer in Reed St., extending from 8th St. to 7th St., and providing for construction of a sewer in 23d St., extending from Raspberry St. to Cranberry St.

**Erie, Pa.**—Ordinance has been passed providing for construction of 9-in. diameter lateral sanitary sewer in Front St., in city of Erie, Pa., extending from Parade St. west 660 ft. more or less, together with necessary house connections. M. J. Henry is Clerk City Council.

**Lebanon, Pa.**—City Engineer T. R. Crowell in report to City Council says that some action should be taken shortly toward arranging for second disposal plant.

**Miners Mills, Pa.**—See "Streets and Roads."

**Parkesburg, Pa.**—By vote of 226 to 49 Parkesburg has authorized Borough Council to borrow \$30,000 for construction of sewer system and disposal plant.

**Punxsutawney, Pa.**—Borough Engineer R. S. Van Rensselaer has been authorized by Council to engage services of Engineer Peel, of Indiana, to complete survey of town's sewer system and to prepare needed maps to submit to State Health Department for proposed extensions of sewer system.

**Upper Darby, Pa.**—City is considering expenditure of \$150,000 for construction of sewers.

**Amarillo, Tex.**—Plans for septic tank for disposal of the city sewage have been submitted to City Commission. Supt. W. A. Watkins designed plans to suit special case of Amarillo. Proposition is tank which will settle solids in sewage, decompose it, take care of gas given out in decomposition, and eliminate offensive odors.

**Dallas, Tex.**—A report recommending that bids on construction of two units of proposed municipal sewage disposal plant be called off until answer is received from James H. Fuertes on changes in plans which would be necessary should pumping station at foot of Cadiz St. will be filed with Board of City Commissioners.

**Houston, Tex.**—See "Miscellaneous."

**Niagara Falls, Ont., Can.**—A by-law authorizing construction of proposed trunk sewer along Muddy Run Creek is to be submitted to voters at municipal election in January. Sewer, which will cost upwards of \$200,000, will follow course of Muddy Run Creek from point north of Grand Trunk yards to Stanley St. Engineer Anderson has been instructed to prepare plans for sewer immediately, to be submitted to Ontario Health Board. That body must ratify plan before work can be started on the sewer.

#### CONTRACTS AWARDED.

**Orland, Cal.**—City Trustees have let contract for extension work on sewer and water systems to G. E. Vincent.

**Sacramento, Cal.**—For constructing trunk line sewer, Sects. A and B, Unit No. 1, to Ross Construction Co., at \$53,877.

**Bridgeport, Conn.**—For construction of sewers on Fairview Ave., Boston Ave., Hallett St. and Golden Hill St. contract was awarded to Charles O. R. Bruno, of 127 Charles St., and sewer on Atlantic St. was awarded to Pierce Mfg. Co.

**Tampa, Fla.**—By Commissioners of Public Works, to Benjamin Thompson, at about \$90,984.25, to construct unfinished portion (section 8) of Hyde Park sanitary sewer system. Work consists of 28,500 ft. 8-in. terra-cotta pipe, 1,332 ft. 10-in. terra-cotta pipe, 1,700 ft. 8-in. cast-iron pipe, 2,691 ft. 16-in. cast-iron pipe, 500 ft. 18-in. cast-iron pipe, 2,200 ft. 24-in. cast-iron pipe, 127 manholes, 5 flush-tanks.

**Pocatello, Ida.**—By City Trustees, for sewer work, to R. M. Barsden, Butte, Mont., at \$84,297.

**Chicago, Ill.**—By Board of Local Improvements for laying of tile pipe sewers with brick manholes and catch basins in various streets to: F. J. McNulty Co., 4345 Prairie Ave.; George Pontorelli and Garrett Barry, 4761 Shields St.; Simon Ryan, Angelo Santucci, Achille Scully, Alfonso Scully and Angelo Mancini.

**South Bend, Ind.**—Board of Works has awarded to Depape & Coussens contract for sewer on Milton Ave., and to Henry DeVoe the contract for trunk sewer on High St., work on both contracts to be started next April.

**Oskaloosa, Ia.**—For sewer construction in Penn College addition to Burlington Construction Co., through its agent, J. W. McKey. Following were bids received: Burlington Construction Co., 8-in. vitrified sewer pipe laid complete, cemented joints, etc., \$1.15 per ft.; brick manholes, each \$75; sewer pipe lamp-holes, each \$11. J. F. Breedle, of Davenport, sewer, per ft., \$1.20; manholes, \$75; lamp-holes, \$12. D. E. Keeler, of Davenport, sewer, \$1.17½; manholes, \$80; lamp-holes, \$15; M. McElliot, of Evanston, Ill., sewer, per ft., \$1.60; manholes, \$72; lamp-holes, \$15.

**Leavenworth, Kan.**—Contract for building sanitary sewer north of Terminal depot has been awarded to Fred Terry & Son at \$898.40.

**Baton Rouge, La.**—By city, to Hubbs & Allen, at \$3,586, to lay line of drainage from North Blvd. to junction point above Laurel St.

**Bloomington, Minn.**—By Village Council for furnishing material and constructing sewer system to Wm. Danforth, St. Paul, at about \$15,000. Work consists of 12,752 ft. 6 and 8-in. vitr. pipe, Y's, specials, etc., and sewage disposal plant, etc.

**Pine City, Minn.**—For constructing sanitary sewer system, to Rogers & McLean, Duluth, Minn., at \$5,788.

**St. Paul, Minn.**—O'Neill & Preston are low bidders for construction of sewer on Fulton Ave. from Palace St. to Jefferson St.

**Aurora, Mo.**—For constructing sewage and purification system, to McCoy & Taylor, Avilon Hotel, Kansas City, Mo., at \$19,907. Other bids as follows: W. McElroy, Fort Scott, \$23,585; Horton Concrete Construction Co., Kansas City, \$22,001; Launder & Gessner, Kansas City, \$25,629; Clements & Lourey, Coffeyville, \$21,265; Middleton & Ludlow, Kansas City, \$23,147; O'Neil Construction Co., Leavenworth, \$22,984; Everett & Burt, Hutchinson, Kan., \$27,234; Inter-Mountain Bridge & Construction Co., Tecumseh, Neb., \$27,669.

**Glendive, Mont.**—For installing sewers in district between Minnesota and 5th Sts. South, and S. 23d and 27th St., to Frank Savarney, at \$8,886.

**Levittown, Mont.**—For constructing sewers in Districts Nos. 36, 37, 38 and 39, to L. W. Schruth, at \$12,843.

**Elizabeth, N. J.**—For construction of 225 lin. ft. 12-in. terra cotta pipe at 60 cts. and 144 lin. ft. 6-in. terra cotta pipe at 28 cts. to Matteo Pinaldo.

**Greenwood Lake Glens, N. J.**—To Frank Puglia, 34 Cross St., Paterson, to construct sewage disposal plant at Greenwood Lake Glens as follows: Disposal plant, \$7,900, about 1,050 ft. 12-in. pipe sewer at 95 cts. per ft., about 1,850 ft. double 8-in. pipe siphon at \$1.40 per ft., 3 manholes at \$35 each and one siphon chamber at \$75.

**Lockport, N. Y.**—To F. J. LeValley contract for drain to be constructed by state from canal through Chapel, Clinton, Mills and William Sts. to 18-mile creek.

**Utica, N. Y.**—Bids for furnishing and laying 932 lin. ft. of 20-in. pipe for outlet sewer in New York Mills land below Capron have been opened by Sewer Commissioners of town sewer District No. 1, town of New Hartford. Contract for this work was given to J. W. Dawes, of Clinton, whose bid was \$1,002.40. There was one other bid, this being by A. W. Fitch, of Utica, for \$1,099.50.

**Cincinnati, O.**—For constructing sewers in Dewey, Gilsey and Sargent Aves., to Kirchner Construction Co., 221 W. 9th St., at \$14,337.

**Chester, Pa.**—Contract for construction of sewer on Townsend St., between 4th and 6th Sts., Chester, has been awarded to Michael J. Honan, Jr., at his bids of \$2.11 per foot for brick and \$3.50 per cubic yard for stone, which includes filling and work complete. Other bids submitted were: John Hanna & Sons, brick, \$2.65 per foot; E. H. Oliver, brick, \$3.25 per foot, and stone \$3.75 per cubic yard; Harry B. Hughes, brick, \$2.45.

**Philadelphia, Pa.**—By Director Dept. Pub. Wks. for constructing main sewers to David Peoples, Philadelphia, as follows: Haverford Ave., 4-ft. diam., 184 ft. with piles and platform, 375 ft. in tunnel brick and stone at \$25,000; Univer-

sity grounds, 6-ft. diam., 324 ft. with piles and platform, 843 ft. without; brick and stone at \$29,000; and Venango St., 6 ft. high by 9 ft. wide, reinforced concrete, 388 ft. on concrete piers and 320 ft. on piles and platform at \$30,000.

**Philadelphia, Pa.**—Following are contracts awarded on sewer construction work: Main sewers: Algard St., 5 ft. to 6 ft. dia., 2,000 ft. brick and stone, \$30,000. R. P. Bennis, Real Estate Bldg.; Cobbs Creek Interceptor, 3 ft. 6 in. and 4 ft. dia., 1,321 ft. brick and stone, \$33,000. Robert Higgins, 4642 Lancaster St.; Kemble Ave., 9 ft. dia., 553 ft. brick and stone, \$17,000. Est. of David McMahon, Main and Chiltenden Sts.; Ashdale St., 13 ft. and 13 ft. 6 in. dia., 560 ft. brick and stone, \$25,000. Robert Higgins, 7th St., 10 ft. 6 in. and 11 ft. dia., 832 ft. brick and stone, \$28,500; Frank Mark Cont. Co., 2820 N. 21st St.; Tabor St., 5 ft. dia., 244 ft. brick and stone, \$4,400. Frank Mark Cont. Co.; Westmoreland St., 8 ft. dia., 183 ft. brick and stone with piles and platform, \$15,000. Edward L. Bader; Annsbury St., 17 ft. 6 in. dia., 247 ft. brick and stone, \$20,500; Peoples Bros.; Haverford Ave., 4 ft. dia., 184 ft. with piles and platform, 375 ft. in tunnel, brick and stone, \$25,000. David Peoples, 25th and Callowhill Sts.; University Grounds, 6 ft. dia., 324 ft., with piles and platform, 843 ft. without piles and platform, brick and stone, \$29,000. David Peoples; Venango St., 6 ft. high by 9 ft. 2 in. wide, reinforced concrete, 388 ft. on concrete piers, 320 ft. on piles and platform, \$30,000. David Peoples. Branch sewers—63 contracts for small brick sewers, some in concrete cradle, varying in size from 2'x1.6 to 4'0"x2'8" egg shape, and from 2'0" to 4'0" circular. Awarded to various contractors at a total cost of \$246,300; 48 contracts of small brick sewers, some in concrete cradle, varying in size from 2'x1'6 to 4'0"x2'8" egg shape, and from 2'0" to 4'0" circular. Awarded to various contractors at a total cost of \$169,900; 27 contracts for small brick sewers, some in concrete cradle, varying in size from 2'x1'6 to 4'0"x2'8" egg shape, and from 2'0" to 4'02" circular. Awarded to various contractors at a total cost of \$87,400. Note—Included in above branch sewers, contracts were awarded for 627 ft. of 36-in. and 1,490 ft. of 3'x2' reinforced concrete pipe. On schedule of August 26th two contracts were awarded in the sum of \$10,000 each for work appurtenant to sewers such as inlets, manholes, house laterals, etc. On schedule of October 14th a contract was awarded to D. J. Lynch for a concrete grit chamber, distributing weirs, pipe and valve work for the Pennypack Creek Disposal Works. Total cost, \$1,800.

**West Chester, Pa.**—West Chester Council has opened bids for construction of additional sanitary sewer system of about 12,500 ft., and lowest bidders were Farrell Brothers, of West Chester, at \$6,320.

**Woonsocket, R. I.**—Contract for building sewers in Fairmount district has been awarded to Thomas Bruno, of Boston, Mass.

**Norfolk, Va.**—By Bd. of Control, for laying of sewer mains in Armistead Bridge Rd., West Ghent Blvd., and other streets, to F. J. McGuire, Norfolk, at \$10,600.

**Richmond, Va.**—By Administrative Board, to Burton Marye, at \$20,718.28, and to Saville & Claiborne, at \$20,693.10, for construction of two sections of Bacon Quarter branch sewer. Chas. E. Bolling is City Engr.

**Toronto, Ont.**—For constructing sewer in Argyle St. to Gawne Contracting Co., at \$36,800.

#### WATER SUPPLY

**Harrison, Ark.**—Election will be held Dec. 22 for voting on \$90,000 bond issue for water and sewer system. Address City Clerk.

**Oakdale, Cal.**—As result of negotiations between Sierra & San Francisco Power Co. and boards of Oakdale and South San Joaquin irrigation districts, arrangements may be reached by which big San Francisco corporation will take care of immense quantities of storage water to be required by irrigation districts when new acreage is put under cultivation. Company is planning new storage basins which cost in neighborhood of three or four million dollars in mountains above Oakdale.

**Santa Ana, Cal.**—Board of Supervisors have passed resolution forming Yorba storm water district.



**Payette, Ida.**—City will vote Nov. 14 on question of issuing water works improvement bonds in sum of \$6,000.

**Ashton, Ill.**—Election has been carried in favor of issuing water works system bonds in sum of \$18,000.

**Bement, Ill.**—Election has been carried in favor of issuing water works improvement coupon bonds in sum of \$3,500.

**Canton, Ill.**—In letter to Dr. Floyd A. Smith, city health commissioner, Engineer Paul Hansen of state water survey at Urbana, makes very complete report on his findings relative to proposed new sources of water supply for Canton. He reports there are three possible projects for securing improved public water supply for Canton, as follows: The Put Creek project involves construction of dam on Put Creek to westward of city, for purpose of forming impounding reservoir, erection of low lift pumping station, laying of pipe line to existing pumping station and erection of filtration plant. The Bell's landing project involves sinking of group of wells in Illinois river bottom lands near Bell's landing; erection of pumping station at that point and pipe line leading to city. It would also be necessary to place elevated equalizing reservoir of at least 250,000 gallons capacity within city, inasmuch as it is necessary to pump at uniform rate through pipe line to avoid undue friction losses. The Big Creek project is somewhat similar to Put Creek project, but nearer city. It involves construction of dam in Big Creek at north-west corner of city for purpose of forming impounding reservoir. Total costs of construction on several projects are as follows: Put Creek project, \$227,600; Bell's landing project, \$190,000; Big Creek project, \$174,700.

**Holton, Kan.**—Worley & Black, Kansas City, Mo., have prepared plans for installation of water system, estimated to cost \$50,000. C. E. Mitchell is City Clerk.

**East New Market, Md.**—Town Council of East New Market will issue \$5,000 in bonds for water supply.

**New Bedford, Mass.**—Petitions have been received for extension of main water pipe.

**Salem, Mass.**—Engineers of State Board of Health have informed boards of Salem and Peabody that only permanent relief from North River nuisance is to sink wells at pumping station deeper, which will cost \$60,000.

**Duluth, Minn.**—Ordinance has been passed to appropriate from public utility fund sum of \$8,000 for purchase of additional water pipe.

**Billings, Mont.**—Ordinance calling special election Nov. 28 for purpose of deciding whether city's \$450,000 water bond issue is to be sold for a 10-year term at 6 per cent. interest has been provisionally passed by City Council.

**Hopewell, N. J.**—Resolution has been passed authorizing issuance of water improvement bonds in sum of \$20,000.

**Island Heights, N. J.**—Voters of borough of Island Heights have decided at special election to buy local water supply system now owned by Island Heights Water Power, Gas & Sewer Co., a private corporation of Philadelphia.

**New Brunswick, N. J.**—Council has been petitioned by Board of Water Commissioners for \$20,000 needed to carry out water board's plans for construction of new dam at Weston's Mill.

**Albany, N. Y.**—Bonds in sum of \$200,000 for extension of water system will be sold by City Comptroller until 11 a. m., Nov. 12. John M. Foll is Comptroller.

**Brooklyn, N. Y.**—Contract for installation of pumping apparatus at Kingston Ave. and Rutland Rd., to relieve flooded conditions in that vicinity, will be let within next few days, according to Borough President Pounds. Pump will be located on grounds of Kingston Ave. Hospital, and will pump water into hospital sewers. Regular sewer system for this section of Flatbush has not been installed as yet.

**Newtown, L. I., N. Y.**—One of the important petitions to come before Newtown local board on Nov. 12 is one requesting Board of Estimate to initiate proceedings for acquiring plant of Citizens' Water Supply Co., which now supplies town of Newtown, including Ridgewood section, with its solidly built up blocks, and Corona and Elmhurst, a total population of over 150,000.

**Pataskala, O.**—H. L. Maddock, Trust Building, Newark, O., has prepared plans

for construction of water system to cost \$25,000.

**West Salem, O.**—State Board of Health has approved of plans for construction of municipal water system.

**Bristol, Pa.**—W. H. Boardman, engineer, 420 Walnut St., Philadelphia, is preparing plans for construction of reservoir and pumping plant.

**New Castle, Pa.**—Council is considering issuing bonds for \$33,000 for construction of water system.

**Punxsutawney, Pa.**—Council has decided to employ, if necessary, a hydraulic engineer to prepare further maps for installation of water system.

**Tamaqua, Pa.**—The Tamaqua Water Commission has decided to ask Borough Council's permission to issue \$69,000 worth of bonds in order to construct reservoir with capacity of 157,000,000 gals.

**Topton, Pa.**—Bond election will be held on Nov. 27 for voting on issuing \$13,000 worth of water supply bonds. Address Borough Clerk.

**Bristol, Tenn.**—Realizing necessity of having Beaver Creek flushed occasionally, Mayor and Commissioners of Bristol, Tenn., are considering building of dam at Clyde's mill, north of Bristol, to retain surplus from city's springs for use in flushing Beaver Creek about twice a week. Sewerage of both Bristol, Tenn., and Bristol, Va., is dumped into Beaver Creek, and it is thought that when Bristol, Tenn., is ready to take action to building this dam, Bristol, Va., will be asked to co-operate.

**Dresden, Tenn.**—Town will vote Nov. 21 on question of issuing water and light bonds in sum of \$27,000.

**Magnolia Park, Tex.**—On Nov. 28 election will be held on \$150,000 worth of water works and street improvement bonds. Address City Secretary of Houston.

**Norfolk, Va.**—Preliminary to awarding contract for \$75,000 worth of water meters final public hearing by Board of Control was held, representatives of three of bidding concerns being before the board. Companies represented at hearing were: Hersey Manufacturing Co., the Buffalo Meter Co. and the Pittsburgh Meter Co. Representatives of other bidding companies were given opportunity of explaining merits of meters offered by them. Contract will be awarded, it is believed, within next few days.

#### CONTRACTS AWARDED.

**Camp Hill, Ala.**—For constructing water system, to Sullivan, Long & Hagerty, Bessemer, at \$15,361.

**Georgiana, Ala.**—For constructing water system, by city, to J. B. McCrary Co., Atlanta, Ga., at \$14,000.

**Ashton, Ill.**—By Village Board for furnishing material and constructing water works to W. G. Hoy, Woodstock, at \$15,767, except engine, contract for which was awarded to Fairbanks, Morse & Co., Chicago, at \$665.

**Madisonville, Ky.**—For constructing reservoir and earth dam, by Board of Public Works, to Lucien Hancock, at about \$17,000.

**Lowell, Mass.**—Bids for material to be used in connection with installation of filtration plant at boulevard were opened in office of Purchasing Agent Foye. Bids included a big assortment of iron doors, cast iron manholes, cast iron sewer grates, etc. Contract will be awarded the Scannell Boiler Wks., of this city. Bids were as follows: Scannell Boiler Wks., 28 Tanner St., \$1,418.70. Frank H. Donnelly, representing a Providence, R. I., foundry, bid \$1,672.75.

**Elsberry, Mo.**—To Arrow Engineering Co., St. Louis, for installation of steam-driven pumping plant.

**Forsythe, Mont.**—For construction of concrete settling basin, to D. M. Wahl, of Forsythe, at \$9,309.

**Lincoln, Neb.**—By City Comrs. to Merkle-Hines Machinery Co., of Kansas City, Mo., at \$25,250 for a 750-kw. turbine and generator, 440-volt, 1 condenser, for 750-hp. compound Corliss engine and spray nozzle system for cooling pond.

**Archbold, O.**—For installation of water system, to H. D. Hallett, Aurora, Ill., at \$14,200.

**Cleveland, O.**—By Board of Control to F. W. Marks Constr. Co., Cleveland, for administration building, gate houses and filter superstructure at \$98,369; and to Fred R. Jones Co., Chicago, Ill., for removing 60,000 additional cu. yds. of earth from clear-water basin site, at 35 cts. per cu. yd.

**Billings, Okla.**—By city, to Humrick-house Construction Co., Carmen, Okla.,

at \$21,898, to construct water works and electric light plant.

**Fleetwood, Pa.**—By Borough Council to Reading Construction Co., at \$3,500, for 5,000 ft. of pipe line extension for municipal water works.

**Philadelphia, Pa.**—By Department of Public Works, for turbo-centrifugal pumps for Torresdale and Wentz Farm, to Southwark Foundry & Machine Co., at \$7,320 for item No. 1 and at \$2,280 for item No. 2, and to D'Olier Centrifugal Pump & Machine Co., at \$16,200 for item No. 3.

**Dallas, Tex.**—Committee on purchase of water meters has reported the purchase of 50 Worthington meters.

**Electra, Tex.**—For erecting 60,000-gal. water tank and tower by city, to Chicago Bridge & Iron Co., Chicago, Ill.

**Waco, Tex.**—In effort to reach greater supply of pure artesian water than has been had heretofore, Water Commissioners have contracted with Hamill Bros. to carry well at First and Webster Sts. deeper. It is now 2,263 ft. deep and flowing at rate of about 600,000 gallons every 24 hours. Commissioners have ordered 2,600 ft. of new casing, and drilling will be resumed when this arrives. The well will be drilled to a depth of 2,300 ft. at the rate of \$5 a ft., the next 100 ft. at \$6.50 a ft. and from that depth on at \$7.50 a ft.

**Norfolk, Va.**—By Board of Control, for laying of water mains in Armistead Bridge Road, West Ghent Blvd. and other streets, to Louis Lawson at \$4,193.75.

**Seattle, Wash.**—For laying water mains on Graham St. to Giulio Argenterieri at \$7,011.08.

#### LIGHTING AND POWER

**Phoenix, Ariz.**—Installation of municipal electric lighting plant is being considered.

**Washington, D. C.**—Supplementing a report which appeared in Daily Consular and Trade Reports of Sept. 5, and Foreign Trade Opportunity No. 13964, the American consul at Port Elizabeth, South Africa, has transmitted third installment of specifications for Port Elizabeth municipal electric-light plant. It is reported that it is uncertain when tenders will be called for, owing to disturbed conditions in the money market. This is final installment in details of this work. Copies of the specifications may be inspected at Bureau of Foreign and Domestic Commerce and its branch offices. No. 14342.

**Ocala, Fla.**—Citizens have voted \$75,000 of bonds to be used in improving electric light plant.

**Adel, Ga.**—Town expects shortly to erect 3,000 ft. of transmission line for series street lamps and six series street lamps. T. R. Sutton is superintendent.

**Galesburg, Ill.**—Property owners on South Prairie St. from Main to Simmons have asked for establishment of street lighting system there either by special assessment or special taxation.

**Holsington, Kan.**—City Council has voted for white way. Main St. for three blocks, beginning with depot, will soon be a blaze of light. The light company is to pay for putting in conduits, property owners for posts and city will pay for current.

**Leavenworth, Kan.**—Bids will shortly be advertised for installation of "White Way" in Delaware, Cherokee and Shawnee Sts.

**Topeka, Kan.**—First steps have been taken to obtain municipal electric light plant in North Topeka.

**Corbin, Ky.**—Election was carried in favor of voting bonds for municipal ownership of electric light plant.

**Fenton, Mich.**—At meeting of Common Council all bids for boulevard lighting system were rejected. Resolution was passed for Fenton to buy its own material and have its own laborers do work of installing the system. Work will be under the supervision of Village Electrician E. A. Lockwood. Following bids were presented: Peck & Granger, of St. Johns, two bids, first for a three light system, 28 posts, \$1,275; a five light system, 28 posts, \$1,350; Barker Cole Electric Co., of Lansing, three light system, 28 posts, \$1,298; five light system, 28 posts, \$1,341.

**Mt. Morris, Mich.**—A mass meeting of citizens in village will be held to consider question of installing municipal lighting plant. Engineers have been working upon proposition for some time and estimates of some kind as to cost and time necessary for construction will probably be offered at that time.

**Alpha, Minn.**—Franchise has been granted to L. T. Sterling to build and operate electric light plant. Construction work will be begun at once.

**Winton, Minn.**—Effort is being made to install new lighting plant for illumination of streets.

**Talmage, Neb.**—Bonds to amount of \$9,000 have been voted for installation of municipal electric light plant.

**Perth Amboy, N. J.**—People have voted in favor of municipal electric lighting system. Bonds will be issued for same.

**Oneida, N. Y.**—Installation of ornamental street lighting system in business section of city is being discussed.

**Weedsport, N. Y.**—Citizens have voted in favor of issuing \$18,000 in bonds, to be used for construction of municipal electric light plant.

**Gallon, O.**—City Director of Service has been authorized to purchase material for installation of cluster-lamp lighting system in business district of city.

**Youngstown, O.**—It is said to be necessary to make changes in present plans at Milton dam in order to install proposed electric light plant. Veeder Heasley, director of public service, said that Mr. Jones, lighting expert employed by city to make plans for lighting of Youngstown, decided that two new conduits were needed and that they would cost nearly \$10,000 to install just now.

**Tiffin, O.**—Plan of changing lighting system from present arc to boulevard system is being discussed.

**Baker, Ore.**—Estimates will be prepared of probable cost of municipal light and water works system to supply dwellings and business houses of town.

**Chalfont, Pa.**—Council has passed ordinance to establish electric light system in the town.

**Frankford, Pa.**—Frankford Board of Trade has taken steps for installation of ornamental lamps in business district. One hundred members will erect tungsten lamps suspended on ornamental arms between curb and building line.

**Hastings, Pa.**—Citizens have voted in favor of erecting municipal light plant.

**Kutztown, Pa.**—City has voted loan of \$23,000 for completion of electric light plant.

**Cathlamet, Wash.**—Election has been carried in favor of issuing electric light plant bonds in sum of \$4,200.

**Tacoma, Wash.**—Estimate of \$9,000 to install electrical distributing system in Parkland, to be connected with Tacoma power lines, has been submitted to Parkland Light & Water Co.

**Niagara Falls, Ont., Can.**—City Council has decided to install decorative lighting systems at north end, the south end and centre, providing enough money can be obtained from banks to carry out the work. Electric light committee was instructed to report on matter at next meeting. Nitrogen lamps are to be used. Fifty will be installed at each end of the city, and 30 at the centre.

#### CONTRACTS AWARDED.

**Bridgeport, Conn.**—Committee on Lamps has recommended that chairman of Lamps Committee, with approval of City Attorney, enter into contract for city with United Illuminating Co. to install 92 electric lights, to constitute white way, the lighting of same not to cost more than \$80 a year for each light.

**Sayreville, N. J.**—By Township Committee two contracts for street lighting, to Sayreville Lighting & Power Co. for period of five years, which calls for installation of 130 incandescent lamps and 15 arc lamps, and to Middlesex & Monmouth Electric Lighting & Heating Co., of Keyport, for lighting Morgan Heights section of town. Contract is for period of five years and calls for 18 lamps.

**Williamsport, Pa.**—The Northern Central Gas Co. will get contract for gas lighting so far as used by city. Mayor Samuel Stabler has introduced ordinance at special session of Council awarding contract to this company at its bid of \$22.50 for a 70-c.p. Welsbach light per year. City will maintain approximately same number of gas lights that it has at present time. Ordinance has been referred to committee of the whole. The contract is for ten years.

**Williamsport, Pa.**—In executive session of council Commissioner Charles A. Cole introduced resolution authorizing superintendent of public affairs to draw up ordinance awarding contract for lighting of streets and parks of city for ten years to Citizens' Electric company at their bid, upon approval by the public service commission. Resolution was adopted by unanimous vote of commission. Figures of Citizens' company on

basis of a ten year contract are as follows: For four ampere magnetite, or electric luminous arc per year, \$45; for 32 candle power incandescent light per year, \$10; for 40 candle power incandescent light per year, \$11.25; for 60 candle power incandescent light per year, \$14; for 80 candle power incandescent light per year, \$16.75; for 100 candle power incandescent light per year, \$18.

#### FIRE EQUIPMENT

**Fresno, Cal.**—Fire Commissioners are contemplating installation of a 300-box alarm system.

**San Francisco, Cal.**—Bids will be called for shortly for furnishing about \$100,000 worth of motor apparatus, chiefly tractors. A. J. Martis is president Board Fire Commissioners, 1530 Fell St.

**Alton, Ill.**—See "Miscellaneous."

**Springfield, Ill.**—Purchase of motor fire engine is being considered.

**Springfield, Ill.**—Specifications for motor pumping engine and hose cart for use of Springfield fire department have been approved by City Commissioners and bids will immediately be advertised for. Engine as provided for in specifications, drawn up by Fire Chief Bolte, shall have capacity of 750 gals., and truck shall have room for carrying of at least 1,500 ft. of hose. Estimated cost of new motor is \$8,000.

**Indianapolis, Ind.**—City Council has authorized bond issue of \$80,000, of which \$28,000 is to be used in buying sites for and erecting two new fire engine houses, and \$52,000 for buying motor fire apparatus for several fire engine houses.

**Kokomo, Ind.**—Council has decided to motorize fire department. Members of Council believe that equipment can be bought for \$15,000 or \$20,000. They propose to buy combination fire engine and hose cart and ladder truck for Central station. For outside stations they propose to use present equipment of ladders and hose carts, but get motors and chassis for them. Each station will be equipped with one motor truck, which will be a combination hose car and ladder wagon.

**Grand Rapids, Mich.**—Fully \$50,000 will be needed by board of police and fire commissioners to carry out plan in 1915 of placing all wires of police and fire signal system on west side underground. Bids on new eight-circuit signal board will be asked for soon. Plans for improvement have already been arranged.

**Kalamazoo, Mich.**—Preliminary investigations have been started by Fire Chief Russell and members of police and fire commission into matter of purchasing an up-to-date motor tractor and motor-driven combination truck for Central fire station, as necessary additions to city's present fire fighting equipment. Commission will make effort to secure additional appropriation of \$10,000 from finance committee of council to carry out proposed plans.

**St. Paul, Minn.**—Purchase of 5,000 ft. of rubber or cotton fire hose is being considered.

**Gulfport, Miss.**—City is about to receive from its engineer specifications on motor-driven fire trucks.

**Clementon, N. J.**—Funds are being raised for purchase of piece of motor apparatus.

**Elizabeth, N. J.**—New automobile will be purchased for fire chief.

**Hightstown, N. J.**—Funds are being raised by Humane Fire Company for purchase of automobile chemical and hose truck.

**Lakewood, N. J.**—Funds are being raised by members of Fire Co. No. 4 to purchase motor chassis.

**Perth Amboy, N. J.**—Fifteen concerns have filed estimates for approximately \$2,800 worth of new fire hose at regular meeting of Board of Aldermen. They were read and referred to committee on fire for consideration and report at future meeting.

**Weehawken, N. J.**—Council is considering petition of residents of First Ward for purchase of piece of motor apparatus.

**Castile, N. Y.**—Movement is under way for purchase of motor combination chemical and hose wagon.

**Greece, N. Y.**—Purchase of fire apparatus is being considered for Kodak Park District.

**Troy, N. Y.**—Bids will shortly be under way for purchase of motor, combination chemical and hose wagon.

**Troy, N. Y.**—Bids will shortly be asked by Board of Contract and Supply for chemical wagon for Farnum Fire Co. City engineer is preparing specifications. Patrick Byron is Chief.

**Canton, O.**—City Solicitor will prepare legislation for bond issue of \$5,000 for purchase of 3,500 ft. of hose and other equipment. R. O. Mesnar is Chief.

**Dayton, O.**—City Purchasing Agent Fowler Smith, who received 28 bids from automobile manufacturers on motor equipment for the city fire department, has announced that contracts would probably not be awarded for at least three weeks. A meeting of manufacturers' representatives has been set for November 12, at city building, when respective bids will be explained. City has authorized expenditure of \$50,000 for motor equipment.

**Allentown, Pa.**—The Liberty Fire Company have asked for purchase of a tractor for their engine.

**Lebanon, Pa.**—The Union Fire Co. has decided to purchase motor chassis for their engine.

**South Bethlehem, Pa.**—Two additional fire alarm stations have been ordered installed.

**Williamsport, Pa.**—Funds are being raised for purchase of new apparatus for Citizens' Hose Company.

**Everett, Wash.**—Five bids have been received by city commissioners for piece of motor equipment for fire department. Lowest bid came from Robinson Fire Apparatus Mfg. Co. through its Seattle agents, Manny Supply Co. The company's bid for motor driven service truck, equipped with ladders and chemical tank, powered with 6-cylinder, 80-h.p. engine, \$6,753. The truck is 55 ft. long. The American-La France Co. submitted tender through A. G. Long, of Portland, to sell Everett a 100-h.p., 6-cylinder truck for \$6,950. The Nott-Joslyn Co. offered truck for \$7,000.

#### CONTRACTS AWARDED.

**Galena, Ill.**—To Star Electric Co., Newark, N. J., for installation of alarm system.

**Salem, Mass.**—City has let contract for putting 5 miles of fire and police signal wires under ground to Standard Underground Cable Co. of Pittsburgh, Va., at \$5,989.99, work to be completed Jan 1st.

**Keewatin, Minn.**—Jaffe & Karon, representing the J. M. Johnson Co. of Minneapolis, has been awarded contract to furnish village with 1,000 ft. of hose at \$1 per ft. Hose is of the Goodrich make.

#### BRIDGES

**Bristol, Conn.**—City Engineer Buell has presented plans for proposed bridge over Pequabuck river on Terryville Rd., estimated to cost \$2,400, and one over North creek on Pond St., estimated to cost \$800. It was voted that bids be advertised for, to be presented at meeting to be held on November 17.

**Alton, Ill.**—See "Miscellaneous."

**Indianapolis, Ind.**—Notice is given that up to 2 o'clock p. m. on 10th day of December bids will be received at Auditor's office of Marion County, Ind., for the purchase of Marion County bridge bonds to amount of \$300,000, bearing interest at rate of 4½ per cent. per annum, payable semi-annually, said bonds being negotiable and payable at the Indiana National Bank, Indianapolis, Ind. William T. Patten is County Auditor. Funds will be used for erecting large bridge on West Washington St. over White River in Center Twp.

**Indianapolis, Ind.**—Notice is given that up to two o'clock p. m. on 10th day of December, 1914, bids will be received at Auditor's office of Marion County, Indiana, for purchase of Marion County bridge bonds to amount of One Hundred and Fifty Thousand Dollars (\$150,000) bearing interest at rate of four and one-half per cent. per annum, payable semi-annually, said bonds being negotiable and payable at the Fletcher-American National Bank of Indianapolis, Indianapolis, Indiana. W. T. Patten is County Auditor.

**Vincennes, Ind.**—Plans have been completed for early starting to work on two first reinforced concrete bridges to be built in Wabash Co. One of these is to be erected near Friendsville.

**Portland, Me.**—Proposals from 25 companies for construction of one or more of three constructional divisions of new Portland bridge have been opened by County Commissioners. Combination of lowest bids in each of three divisions, exclusive of piling, is \$721,000, and piling will probably cost in vicinity of \$30,000. Contracts have not yet been awarded. Three divisions are, in general, for foundation work (Div. A) for steel superstructure of middle section of bridge (Div. B), including draw; and for concrete superstructure of rest of bridge



(Div. C). Lowest proposal on Div. A was made by Holbrook, Cabot & Rollins, of Boston, \$324,000. For Div. B, Phoenix Bridge Co., of Boston, submitted lowest proposal, \$139,650. Lowest bid for Div. C was made by Walsh Construction Co., of Albany, N. Y., being \$227,000. There was only one proposal in which supplementary figures for whole bridge were made. The P. J. Carlin Construction Co., of New York, offered to build entire bridge for \$925,000. All other bids were by divisions. The bids were as follows: Lackawanna Bridge Co., New York, Div. B, \$168,742; Foley Contracting Co., New York, Div. A, \$403,600, Div. B, \$171,800, Div. C, \$207,000; McClintic-Marshall Co., Boston, (b) \$171,800; P. J. Carlin Construction Co., New York, (a) \$394,500, (b) \$161,000, (c) \$358,000; T. L. Eyre, Philadelphia, (a) \$281,000 (c) \$281,000; The Foundation Co., New York, (a) \$495,888; McArthur Bros. and the Foundation Co., New York, (a) \$490,385, (b) \$155,000, (c) \$290,000; Phoenix Bridge Co., Boston, (b) \$139,650; Pennsylvania Steel Co., Boston, (b) \$147,400; American Bridge Co., Boston, (b) \$156,500; H. P. Converse & Co., Boston, (a) \$345,181, (b) \$160,273, (c) \$279,599; Walsh Construction Co., Albany, N. Y., (a) \$380,000 (b) \$170,000, (c) \$270,000; T. Stuart & Son Co., Newton, Mass., (a) \$337,000, (c) \$250,000; John Cashman & Sons, Boston, and Roy H. Beedy, (a) \$325,000; Frawley-Kaufman Contracting Co., New York, (c) \$328,000; McHarg-Barton Co., New York, (a) \$324,700, (c) \$307,886; Boston Bridge Works, Boston, (b) \$149,485; Fraser, Brace & Co., New York, (a) \$484,349, (c) \$353,420; John Monks & Sons, New York, (a) \$559,800; Fred T. Ley & Co., Springfield, Mass., (c) \$331,687; O'Brien Construction Co., New York, (c) \$300,000; Fort Pitt Bridge Works, Pittsburgh, (b) \$215,677; A. W. Kurz, New York, (b) \$172,500; Strobel Steel Construction Co., Chicago, (b) \$159,800; Holbrook, Cabot & Rollins, Boston, (a) \$324,000, (c) \$315,000.

**Haverhill, Mass.**—Mayor Moulton favors a concrete bridge for Merrimack River to replace present Haverhill bridge, which County Commissioners are to build in a year or two.

**Billings, Mont.**—Trustees of Chamber of Commerce have formally indorsed proposed erection of two bridges over Yellowstone River near Billings. One of bridges will be constructed a short distance west of city and other will be at Pompeys Pillar. Total cost of both bridges is estimated at \$75,000.

**Lockport, N. Y.**—City Treasurer Hutcheson has reported to Common Council that he had sold to D. E. Lawson at par the \$1,000 bonds for building of bridge over creek at Olcott St., for repair of drain on Orchard St., and construction of drain across lands of W. S. Shapleigh.

**Pennsylvania.**—Carbon County Commissioners have been authorized by court to erect three new county bridges, one across Quakake Creek, one Aquashicola and another across Wild Creek.

**Sioux Falls, S. D.**—The 10th St. viaduct will be rebuilt as soon as details of reconstruction can be decided upon, according to action taken by City Commissioners.

**Newport News, Va.**—City engineer has been authorized to redeck 34th street bridge.

**Radford, Va.**—Ordinance is pending in City Council providing for issuance of bridge bonds to amount of \$12,500.

**Salt Lake City, Utah.**—The Utah County Commissioners have decided to bridge the Jordan and open new road for benefit of farmers in the district.

#### CONTRACTS AWARDED.

**Woodland, Cal.**—For constructing Yolo-Solano concrete bridge by County Comrs. to Clinton Fireproofing Co., San Francisco, at \$30,000.

**Atlanta, Ga.**—For constructing Broad St. and Forsyth St. viaduct to R. M. Walker, Atlanta, at \$5,000.

**Danielsville, Ga.**—By Commissioners of Elbert and Madison Counties, for construction of steel bridge over Broad River at Moore's Shoals, near Carlton, to East St. Louis Bridge Co., East St. Louis, Ill., at \$10,195.

**Rome, Ga.**—For constructing concrete bridge over Armuchee Creek by County Commissioners to W. A. Hicks, Birmingham, Ala., at \$5,396.

**Stockton, Ill.**—To Galena Iron Works, Galena, Ill., for reinforced concrete superstructures for three bridges, known as Katzenberger, Kellar and Clark bridges, in Berriman Township.

**Johnson, Kan.**—To Decatur Bridge Co., Kansas City, Mo., at \$2,705, low

water reinforced concrete bridge, four 20-ft. spans.

**New Orleans, La.**—To C. W. J. Neville, at \$7,995, for concrete and steel bridge to be constructed over London Ave. Canal at Gentilly Rd.

**Sunderland, Mass.**—By Board of Selectmen, contract for construction of concrete abutments for town bridge, to Casper Ranger Construction Co., Holyoke, Mass.

**Portland, Ore.**—By City Commission, contract for repairs to Grand Ave. bridge over Sullivan's Gulch, to Jeffrey & Buf-ton, at \$7,990.

**Chattanooga, Tenn.**—The Bridge Commission has let contract for bridge over the Tennessee River at Market St. Contract for naked concrete work was let to Vang Construction Co., of Cumberland, Md., this company's bid of \$342,491 being lowest submitted. Steel contract was let to the Toledo Bridge & Crane Co. This bid of this company was \$68,127 for fixed span and \$119,098 for bascule lift span.

**Lampasas, Tex.**—At meeting of Commissioners' Court contract was let to Hess & Skinner, of Dallas, for four bridges in this county, three to be of steel and iron and one of concrete. Reported price is \$11,400, exclusive of approaches. A \$14,000 bond issue was voted recently for erection of these bridges.

**Seattle, Wash.**—For bridge roadway on Fairview Ave., North, to C. Geske & Co. at \$20,824.20.

**Dewey, Wis.**—By State Highway Commission at Madison to Worden-Allen Bridge Co., Milwaukee, for constructing Dewey Bridge, at \$10,492, and Town Line Bridge at \$9,500. M. W. Torkelson is Bridge Engineer, State Dept.

#### MISCELLANEOUS

**Montgomery, Ala.**—Dr. William H. Oates, state prison inspector, has announced that board of revenue of Shelby county is preparing to make extensive improvements on jail at Columbiana.

**El Centro, Cal.**—Imperial Valley has voted in favor of \$3,500,000 bond issue for purchase of California Development Co. irrigation system. Part of system is in Mexico, and will necessitate ownership of stock in Mexican corporation by Imperial Irrigation District Board of Directors. Water supply comes from Colorado River.

**Etna, Cal.**—\$14,000 worth of the \$21,000 bonds issued by Etna, Siskiyou Co., have been sold and it is expected that entire issue will have been disposed of within next few days.

**Bridgeport, Conn.**—Bridgeport is to have another automobile street water sprinkler of same type as two now in use in city. Machine will cost \$4,200 and will be paid for from street sprinkling fund appropriated by Board of Apportionment.

**Jacksonville, Fla.**—Bonds in sum of \$250,000 have been recommended for municipal market.

**Augusta, Ga.**—Bids will be received by Finance Committee of the City Council of Augusta, Ga., to be led with Clerk of Council at his office, Augusta, Ga., until 12 o'clock, noon, City of Augusta, on 12th day of November, 1914, for purchase for cash of all or any part of \$250,000 principal amount of bonds known as "City of Augusta Flood Protection Bonds of 1914."

**Alton, Ill.**—City Clerk has been authorized to call special election to be held on the 28th day of November, 1914, for purpose of submitting following propositions. The issuance of bonds in sum of \$96,000 for erecting and furnishing of new city hall; bonds in amount of \$15,000 for erection and equipment of fire department building in Upper Alton; bonds in sum of \$55,000 for construction of public viaduct across 7th St. between State St. and Alby St.

**Fort Wayne, Ind.**—Board of public works will order new resolution drafted on Lakeside dike matter, plan to be followed being constructed of concrete dike along St. Joe, from the Columbia street bridge to Delaware Ave., and then following meander of stream, with earthen dike to State St. bridge.

**Fort Scott, Kan.**—Purchase of street sweeper in near future is being considered.

**Baltimore, Md.**—Baltimore is about to start upon expenditure of more millions for improvements. The two loan ordinances ratified at election carry with them appropriations amounting to \$4,500,000, which will be expended for work

on sewerage system, dredging harbor, widening St. Paul St. and completing the Key highway.

**Cambridge, Mass.**—Board of Trade is considering plans for disposal of garbage and refuse. Wants information regarding use of motor trucks for same, probable cost, etc. I. C. Pratt, 634 Massachusetts Ave., Cambridge, Mass.

**Haverhill, Mass.**—Municipal bonds in sum of \$77,000 will be sold over counter.

**Sault Ste. Marie, Mich.**—Ordinance Committee will advise Council to purchase 2,000 10-gal. garbage cans of corrugated galvanized iron, to be used at private residences, and 50 20-gal. cans of same kind, for hotels, restaurants and boarding houses.

**Duluth, Minn.**—System of recreation centers and playgrounds has been planned.

**Keewatin, Minn.**—As result of opening of bids for purchase of a \$70,000 bond issue, money that is needed for municipal improvements, M. H. McMahon, of Virginia, representing Blwabik persons, is thought to have entered lowest bid. It will take week to complete tabulation of bids.

**Andover, N. J.**—By majority of 17, voters have authorized Mayor and Council to spend \$800 from surplus money of borough to purchase land for site of new town hall.

**Paterson, N. J.**—Purchase of automobile ambulance for use at Isolation Hospital is being considered.

**Trenton, N. J.**—Ordinance has been passed authorizing issuance of bonds for harbor improvements. Frank Thompson is City Clerk.

**Lockport, N. Y.**—People have voted in favor of public market to cost \$20,000.

**New Albany, N. Y.**—City Clerk Albert C. Taylor has been directed to advertise for bids on supply of license tags for next year.

**Dayton, O.**—Bids will be received at office of county commissioners of Montgomery county, Ohio, until 10 o'clock a. m., Friday, Nov. 27, 1914, for purchase of sixteen hundred dollars (\$1,600) coupon ditch bonds, issued for payment of Hepner Ditch Improvement.

**Norwood, O.**—Public Service Commission has recommended purchase of garbage disposal plant. Director of Public Service will call for bids. Estimated cost is \$30,000.

**Hastings, Pa.**—Citizens have voted in favor of bond issue for erection of municipal building.

**Kutztown, Pa.**—City has voted loan of \$26,000 for improving its city hall.

**Philadelphia, Pa.**—Bonds in sum of \$825,000 will be sold over the counter by City Treasury, beginning at 10 a. m., Nov. 9.

**Spangler, Pa.**—Proposition has been carried to increase indebtedness by \$6,500 for erection of municipal building.

**Wilkes-Barre, Pa.**—About 2,000 street signs are needed in city.

**Providence, R. I.**—Board of Aldermen have unanimously passed resolution authorizing erection of addition to Museum building at Roger Williams Park, and approved plans for building, which are revisions of original drawings, and which call for addition which can be built within appropriations made for building several months ago.

**Houston, Tex.**—Houston tax payers have voted favorably on proposals to issue bonds to amount of \$5,200,000 for harbor wharfage, terminal facilities, bayou improvements, drainage and sanitary sewers and for additional school buildings and exposition grounds.

**Lynchburg, Va.**—Purchase of automobile ambulance is being considered.

#### CONTRACTS AWARDED.

**San Francisco, Cal.**—The Works Board has awarded contract for ornamental composition plaster for new City Hall to P. E. Deniville for \$9,325. Contracts for portions of sheet metal works have been given to United States Metal Products Company for \$66,780 and Paraffine Paint Co. for \$6,582.

**San Francisco, Cal.**—Contract for construction of Twin Peaks tunnel has been signed by Board of Public Works and Robert C. Storrie & Co. In presence of city officials and citizens who had been closely interested in tunnel proceedings. Contract price is \$3,372,000. Tunnel is to be built within 1,000 days. It will be 12,800 ft. long—about two and a quarter miles.

**Jacksonville, Fla.**—Contract for dredging in connection with municipal docks has been awarded by Board of Port Commissioners. The Home Dredging Co., of Mobile, Ala., had lowest bid and was awarded the contract.

**Joplin, Mo.**—By city to Home Tel. Co. for installation of police-alarm system to be maintained by company.

**Albany, N. Y.**—Board of Contract and Supply has awarded to Great Lakes Dock & Dredge Co. contract for dredging out Albany basin at 40 cts. a cu. yd. There are 65,000 cu. yds. to be removed in 75 days.

**Brooklyn, N. Y.**—The Knickerbocker Supply Co. was low bidder, with three competitors, for furnishing street signs in various sections of borough. Amount of bid was \$811.

**Philadelphia, Pa.**—Low bidders in eight districts who will likely be awarded contracts are: For street cleaning: James A. Mullin, \$94,700; James Irwin, \$104,038; Edwin H. Vare, \$200,000; Edwin H. Vare, \$290,000; James D. Dorney, \$131,000; Thomas E. Flanagan, \$103,309; James D. Dorney, \$162,900; David McMahon, Est., \$146,900. For removal of rubbish: James A. Mullin, \$43,770; People's Bros., Inc.,

\$48,900; Edwin H. Vare, \$70,000; Edwin H. Vare, \$82,000; James D. Dorney, \$66,000; Thomas L. Flanagan, \$83,391; Frank Curran, \$64,720; McMahon Est., \$84,900. County roads are to be cleaned twice a week. The refuse to be collected from houses is to be the property of the city, and bids for its purchase will be asked soon.

**Austin, Tex.**—Lowest bid covering all the work called for in city's specifications for concrete pier and floating wharf at dam was that of A. A. Mundt, amounting to \$13,745, according to estimate of quantities made by Assistant City Engineer Iredell.

## TOO LATE FOR CLASSIFICATION

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREETS AND ROADS</b>				
Pa.,	Pottsville	Noon, Nov. 16.	Grading and improving ground at Hospital for Insane...	Controller of Schuylkill Co.
<b>SEWERAGE</b>				
Wis.,	Sheboygan	4 p.m., Nov. 14.	Sewer construction	Board Public Works.
Ill.,	Chicago	11 a.m., Nov. 16.	Pipe sewer with brick manholes and catchbasins.	E. J. Blackin, Secy. B. L. I.
Ill.,	Chicago	11 a.m., Nov. 18.	10-inch tile pipe sewer construction.	L. E. McGann, Comr. P. W.
O.,	Salem	Noon, Nov. 23.	Sanitary sewer construction.	I. N. Russell, Dir. P. S.
<b>WATER SUPPLY</b>				
Minn.,	Aurora	8 p.m., Nov. 13.	Furnish air compressor.	W. J. Lord, VII. Clk.
Wis.,	Oconomowoc	Nov. 14.	Laying 1,200 ft. of 6-inch main.	H. A. Ernst, B. P. W.
Minn.,	Alexandria	Nov. 16.	Six blocks of water mains.	C. I. Sundblad, City Clk.
Mass.,	Beverly	7 p.m., Nov. 17.	50 tons of 6-inch pipe, 70 tons of 18-inch pipe.	Com. on Publis Serv. & Aid.
Mont.,	Hardin	Nov. 17.	Water distributing system.	F. M. Lipp, Town Clk.
N. J.,	Manasquan	Nov. 17.	8,300 ft. water mains and sewers and sewage purification plant	Mayor and Council.
O.,	Cleveland	Dec. 2.	Furnishing and placing filter equipment and operating machinery	Comr. of Pur. & Sup.
<b>LIGHTING AND POWER</b>				
R. I.,	Pascoag	Noon, Nov. 16.	Electric lines and substation equipment.	Pascoag Fire Dist. Electric Light Board.
<b>FIRE EQUIPMENT.</b>				
N. Y.,	Binghamton	Nov. 18.	Fire station	Board Contract & Supply.
<b>MISCELLANEOUS</b>				
N. J.,	Linden	Nov. 17.	Additions and alterations to Borough Hall.	Clarence H. Smith, Boro. Clk.

### STREETS AND ROADS

**Fairfield, Cal.**—At meeting here Supervisors of this county have authorized County Treasurer George Weniger to purchase \$100,000 worth of State highway bonds. This will be \$250,000 worth of bonds purchased by this county, \$150,000 having been taken six months ago, and in another six months another \$100,000 will be taken. Eighteen miles of highways are now near to completion in this county, and contract for building of nine additional miles will be let on November 9.

**Oakland, Cal.**—City engineer will prepare plans and specifications for construction of concrete culverts in Sansal Creek in 31st Ave., and bids will shortly be called for.

**Placerville, Cal.**—At meeting of the City Trustees plans were discussed for making Main St. conform with State highway. A committee was appointed to interview Highway Engineers in regard to cost of continuing construction work through city.

**San Francisco, Cal.**—Board of Works has invited bids for paving Corbett Ave. from Stanford Heights to United Railroad tracks at Sloat boulevard. Pavement will be asphalt on concrete base.

**Santa Ana, Cal.**—City Board is considering proposal to pave city streets to meet county good roads on South Sullivan St.

**Susanville, Cal.**—See "Water Supply."

**Yuba City, Cal.**—State Highway Commission, upon petition of land owners along proposed State highway route, have agreed to advertise for bids for construction of 11 7-10 miles of highway from Yuba City to northerly boundary of Sutter County, which is two miles above Live Oak. Road is to be of concrete macadam construction. Engineer's

estimate is that work will cost \$9,000 a mile. It is understood \$110,000 of State highway bonds have been marketed in this connection.

**Lawrence, Kan.**—Plans for boulevard drive along western city limits, from Warren St. to University, are being prepared by Wakarusa Road and Improvement Club. The boulevard, as planned, will run west from Warren St. a half mile, then south on Township road, then east, to connect with Lawrence and University, a highway of nearly two miles, of rock, 10 ins. thick, and periodically oiled, if found necessary. Road will be 16 ft. wide.

**Gulfport, Miss.**—Surveys are being made on proposed beach highway.

**Elizabeth, N. J.**—Following bids were received for paving Bayway, from Chilton St. to Westfield Ave., previous lot of bids having been rejected because of threatened litigations between two lowest bidders: James J. Potts, \$18,558; John C. O'Neill, \$18,928.01; T. Foster Callahan, \$18,839.35; Edward L. Faughnan, \$18,783.90; Samuel Sampson, \$18,770.37.

**Linden, N. J.**—Township Committee has taken steps to macadamize Elizabeth Ave. from borough line to Rahway city line, and engineer was directed to advertise for bids to be received Nov. 23. The street will be paved with 8-in. macadam, 16 ft. wide. Section to be improved is more than a mile in length.

**Ridgewood, N. J.**—Taxpayers of Ridgewood, N. J., have voted appropriation of \$80,000 as their share toward abolishing four-track grade crossing of Erie Railroad at that place. System of tunnels will be constructed. Erie will build new depot and will expend about \$200,000 in the work.

**Roselle Park, N. J.**—Opening of Locust Ave. beneath tracks of Lehigh Valley Railroad, is being urged.

**Brooklyn, N. Y.**—At meeting of Board of Estimate following final authorization for public improvements were granted: Paving with asphalt, 15th St., from Fort Hamilton Ave. to point 215 ft. west of 11th Ave. Estimated cost, \$1,400.

**Port Jervis, N. Y.**—Proposition for improved road through township carried almost unanimously at election on Tuesday last. It involves the construction of stone road from where stone road leaves off on Clove road, near Clove Church, to and through village of Colesville and along mountain road to where road turns up to High Point.

**Rochester, N. Y.**—Ordinance has been adopted for widening of Ormond St.

**Magnolia Park, Tex.**—On Nov. 28 election will be held for voting on bond issue of \$150,000 for street improvements and water works.

**Richmond, Va.**—Council Committee on Streets has selected 14th St. as approach to Mayo Bridge and directed City Engineer to make report on plans to widen thoroughfare.

**Suffolk, Va.**—Resolution has been adopted advising State Highway Commission that funds apportioned to this county for permanent improvement of roads for year 1915 will be taken and used in Windsor district and in Newport district.

### CONTRACTS AWARDED.

**Gadsden, Ala.**—Contract has been awarded for curb and gutter on Walnut St. to C. O. Duncan for 57 cts. a sq. yd.

**St. Paul, Minn.**—For grading Wentworth St. to Martin Eberhard at \$725, and for grading Benz Ave. to Christ Johnson at \$646. Also for grading Clarence St. to Thornton Bros. at \$3,887.

**Dormont, Pa.**—For 900 yds. grading to Richardson & Carter at 42 cts. per yd.